PIONEER
The Art of Entertainment

Service Manual

ORDER NO.
RRV1433

CD CDV LD PLAYER
CLD-V250

- **Refer to the service manual RRV1189 for CLD-V250/HGZ.**

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model	Power Requirement	The voltage can be converted by the following method.
	CLD-V250		
HGSZ8	○	AC220-230V/240V	With the voltage selector

CONTRAST OF MISCELLANEOUS PARTS

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

CLD-V250/HGSZ8 and CLD-V250/HGSZ have the same construction except for the following :

Mark	Symbol & Description	Part No.		Remarks
		CLD-V250/HGSZ	CLD-V250/HGSZ8	
NSP	CE mark label	Not used	RRW1222	

Note 1 : The ⚠ marks will be added in the parts list and schematic diagram for the following :
- L206 – L210 of the MOTHER assy
- L207 and L208 of the AUDB assy

Note 2 : CLD-V250/HGSZ and /HGSZ8 will become CLD-V250/HGZ and /HGZ8.

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T-IZM NOV. 1995 Printed in Japan

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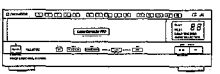

ORDER NO.
RRV1189

The chapter 1 of this Service Manual will not be reprinted. On your additional orders, we may supply only the chapter 2. For the chapter 1, please make copies and attach to the chapter 2 at your side if necessary.

CD CDV LD PLAYER

CLD-V250

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model	Power Requirement	Remarks
	CLD-V250		
HGZ	○	AC220-230V/240V	with the voltage selector

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T-IFI OCT. 1994 Printed in Japan

CHAPTER 1

1. SAFETY INFORMATION

(FOR EUROPEAN MODEL ONLY)

VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

VARNING!
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.

LASER
Kuva 1
Lasersateilyn varoitusmerkki

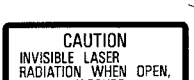
WARNING!
DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

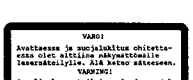
IMPORTANT
THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

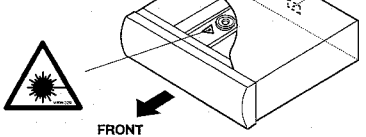
LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

LASER
Picture 1
Warning sign for laser radiation

LABEL CHECK







Additional Laser Caution

1. The ON/OFF statuses of the slider-position detection switches (PARK INNER, PARK OUTER on the PKSB assy), loading-status detection switches (SW 1, 2 and 3 on LOSB assy) are detected by the microprocessor (IC101 in the MOTHER assy). To permit the laser diode to oscillate, it is required to set the slider-position detection switch for the LD ACTIVE status (PARK INNER : OFF, PARK OUTER : OFF), and to set the loading-status detection switch for clamped state (SW1 : OFF, SW2 : ON, SW3 : ON). As long as these requirements are not satisfied, the laser diode will not oscillate. When the requirements are met in any way, the laser diode can oscillate. The laser diode oscillation will continue if pin 29 of IC801 is shorted to GND or the emitter and collector of Q809 are shorted each other (fault condition) in MOTHER assy.
   In the test mode ＊, the laser diode oscillates when microprocessor detects a PLAY signal or when the PLAY key is pressed (S1024:ON in the FRLB assy), with the above requirements satisfied.
2. When the cover is open, close viewing through the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

＊: Refer to page 1 - 11.

2. SPECIFICATIONS

1. General

System ..... LaserVision Disc system and Compact Disc digital audio system
Laser ..... Semiconductor laser wavelength 780 nm
Power requirements
..... AC 220 - 230 V/240 V (switchable), 50/60 Hz
Power consumption ..... 43 W
Weight ..... 7.4 kg
Dimensions ..... 420 (W) x 379 (D) x 122 (H) mm
Operating temperature ..... +5°C ~ +35°C
Operating humidity ..... 5% ~ 85%
(There should be no condensation of moisture.)

2. Disc

LaserVision Discs

PAL disc

*Maximum playing times
30 cm active play disc ..... 72 min/both sides
30 cm long play disc ..... 2 hours/both sides
20 cm active play disc ..... 28 min/both sides
14 min/one side
20 cm long play disc ..... 40 min/both sides
20 min/one side

Spindle motor speed
Active play disc ..... 1,500 rpm
Long play disc ..... 1,500 rpm (inner circumference)
to 570 rpm (outer circumference)
(For a 30 cm disc)

NTSC disc

*Maximum playing times
30 cm standard play disc ..... 1 hour/both sides
30 cm extended play disc ..... 2 hours/both sides
20 cm standard play disc ..... 28 min/both sides
14 min/one side
20 cm extended play disc ..... 40 min/both sides
20 min/one side

Standard play disc ..... 1,800 rpm
Extended play disc ..... 1,800 rpm (inner circumference)
to 600 rpm (outer circumference)
(For a 30 cm disc)

Compact Discs

DISC ..... Diameter: 12 cm, 8 cm, Thickness: 1.2 mm
Rotation direction (pickup side) ..... Counterclockwise
Linear speed ..... 1.2 ~ 1.4 m/sec
*Maximum playing time ..... 74 min. 12 cm discs
20 min. 8 cm discs
(For stereo playback)

Compact Discs with Video

Disc ..... Diameter: 12 cm, Thickness: 1.2 mm
Rotation direction (pickup side) ..... Counterclockwise
Linear speed ..... Audio portion: 1.2 ~ 1.4 m/sec
Video portion: 11 ~ 12 m/sec
*Maximum playing time ..... Video portion: 5 min. (CLV)
Audio portion: 20 min. (Digital)

** Actual playback time differs for each disc.*

3. Video characteristics

Format ..... PAL/NTSC specifications
Video output
Level ..... 1 Vp-p nominal, sync. negative, terminated
Impedance ..... 75Ω unbalanced
Jack ..... RCA jack

4. Audio characteristics

Output level
During analog audio output ..... 200 mVrms
(1 kHz, 40%)
During digital audio output ..... 200 mVrms
(1 kHz, –20 dB)
Jacks ..... Both RCA jacks
Number of channels 2

5. Other Terminals

TO ANOTHER PLAYER ..... Miniature jack

6. Functions

KARAOKE/NORMAL mode ..... Switchable
KARAOKE mode:

- Changing song ..... Within 30 seconds after starting playback
- Canceling song ..... Within 30 seconds after starting playback

NORMAL mode:

- Play (Auto play)

Alternate play function

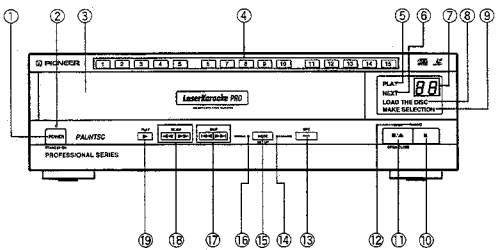
7. Accessories

Audio cable 1
Video cable 1
Control cable 1
Power cord 1
Operating instructions 1

NOTE FOR CLD-V250:
The accessory power supply cord can only be used on the continental Europe. In the countries except for continental Europe, do not use the accessory power supply cord. Consult with the company sales representative. "Use Only Safety Licensed Power Supply Cord".

NOTE:
The specifications and design of this product are subject to change without notice, due to improvements.

3. PANEL FACILITIES



① **POWER STANDBY/ON switch**
Press to turn the power on and off.
- When the player is connected to an electrical socket and the power switch on the front panel is switched off, the machine will remain in standby mode. In standby mode, the disc anti-warp mechanism is activated to protect the disc.

② **STANDBY indicator**
Lights up when the power is turned off.

③ **Disc table**

④ **Direct music search buttons (1 - 15)**
Press these buttons to select the playing chapters.

⑤ **PLAY indicator**
Lights up in playback or pause mode. Blinks while reading TOC or search operation. When the alternate play is carried out with the two players, this indicator on the player which is in playback standby mode goes off.

⑥ **NEXT indicator**
When karaoke playback is alternately carried out with two players, this indicator on the player which is in playback standby mode lights up.

⑦ **Selection number indicator**
Displays the chapter number being played.

⑧ **LOAD THE DISC indicator**
Lights up when a disc is not loaded.

⑨ **MAKE SELECTION indicator**
Lights up during normal playback or when the chapter selection is possible in Karaoke mode. Blinks in Karaoke mode when the player is set to Reselect mode. Also, blinks if no chapter is selected in Karaoke mode.

⑩ **Pause button (II)**
To stop playback temporarily, press this button during playback. Press this button again to resume playback.

⑪ **STOP/OPEN/CLOSE button (■/⏏)**
Press this button when taking out or loading a disc. Also, use this button when stopping playback or for Reselect mode.

Caution on the auto loading operation
Since this player employs the auto loading function, use the STOP/OPEN/CLOSE button to open or close the disc table. Pulling, pushing or applying excessive force to the disc table may result in a malfunction.

⑫ **PAUSE indicator**
Lights up if playback can be paused with II button. Blinks during pause. Does not light if playback cannot be paused.

⑬ **MPX button/indicator**
Lights up when the multiplex audio disc with digital audio (NTSC system disc) is played back in Karaoke mode. Audio output is selected with this button.

⑭ **KARAOKE indicator**
Lights up when Karaoke mode is selected with the MODE button. Blinks when Alternate play mode is set to "PL1".

⑮ **MODE button**
Press this button to switch the player between Karaoke mode and Normal mode.
When alternate play mode is set to "PL1" or "BGV/BGV" this button does not function.

⑯ **NORMAL indicator**
Lights up when NORMAL is selected with the MODE button. Blinks when Alternate play mode is set to "BGV/BGV".

⑰ **SKIP buttons (|◄◄ , ►►|)**
Press these buttons to return or advance playback to the beginning of the previous or next chapter/track. These buttons can only be used in Normal mode.

⑱ **SCAN buttons (◄◄ , ►►)**
Press for fast-reverse or fast-forward operation. These buttons can only be used in Normal mode.

⑲ **PLAY button (►)**
Press this button in Normal mode to start playback from the beginning of the disc.

4. IC INFORMATION

- The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

■ DYW1395 (MDKI ASSY IC101)

• Mode control IC

• Pin Function

No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
1	Vcc	–	Power supply voltage for microcomputer.	35	——	O	Not used.
2	——	O	N.C.				
3	SCK	I	Communication clock with the mechanism controller and character generator.	36	KS0	O	Key scan 0.
				37	KS1	O	Key scan 1.
4	SI	I	Receive a data from the mechanism controller.	38	KS2	O	Key scan 2.
				39	KS3	O	Key scan 3.
5	SO	O	Transmit a data to the mechanism controller and character generator.	40	SELECT LED	O	Select LED ON/OFF.
				41	DISC LED	O	Disc LED ON/OFF.
6	RESET	O	Reset the mechanism controller and character generator.	42	NEXT LED	O	Next LED ON/OFF.
				43	PLAY LED	O	Play LED ON/OFF.
7	CS	O	Chip select for the character generator	44	HALF OPEN	O	Not used.
8	CD	O	Switching signal output of the over-current detection circuit. L : for CD , H : others				
9	CUR DET	I	Over-current detection signal input. L : Over-current detection , H : Normal				
10	AVcc	–	Reference voltage for A/D converter.	45	PLAY	O	Not used.
11	Kin6	I	Key input 6.				
12	Kin5	I	Key input 5.	46	——	O	Not used.
13	Kin4	I	Key input 4.				
14	Kin3	I	Key input 3.	47	——	O	Not used.
15	Kin2	I	Key input 2.				
16	Kin1	I	Key input 1.	48	——	I	——
17	Kin0	I	Key input 0.	49	——	I	Not used.
18	A/D IN	I	A/D converter input.	50	SELECT	I	Music selection permit/forbid when connecting the BO.
19	AVss	–	Ground for A/D converter.				
20	Vss	–	GND.	51	——	I	Not used.
21	NC	–	N.C.	52	Dual/NTSC	I	Model discrimination. H : CLD - V250
22	Vcc	–	+5V.				
23	Vss	–	Ground for microcomputer.	53	PULL	I	Not used.
24	Xin	–	System clock. connect the 8MHz oscillator.				
25	Xout	–		54	PUSH	I	Not used.
26	RESET	I	Reset for mode controller.				
27	SHAKE	I	Communication timing signal with mechanism controller. (combine the ACK output.)	55	Ready/Busy	I	Write permit/forbid for EEPROM.
				56	DO (E^2PROM)	I	Data reception for EEPROM.
				57	CTRL (one touch)	O	Not used.
28	SEL IR	I	Remote control input.	58	Upper/Lower LOGIC.	I	Model discrimination. H : CLD - V250
29	W.D.F	O	Watchdog timer.				
30	POWER ON	O	Power.	59	DI (E^2PROM)	O	Data transmission for EEPROM.
31	Vss	–	GND	60	SCK	O	Clock for EEPROM.
32	SELECT2	O	Active/Non active discrimination at the simple alternately operation.	61	CS	O	Data read/write, Permit/forbid for EEPROM.
33	JACK (LO connecting)	I	Cable ON/OFF for the simple alternately operation.	62	DATA IN	O	For 7 seg. IC data transmission.
				63	CLOCK	O	Clock for 7 seg. IC.
34	TEST	I	Unit checker mode/Normal mode discrimination.	64	ENABLE	O	7 seg. IC data transmission, Permit/forbid.

■ PD0213A (MOTHER ASSY IC101)

• Mechanism control IC

• Pin Function

No.	Pin Name	I/O	Function
1	VCC	–	Power supply connection pin. Set to 5V ± 10%.
2	N.C.	O	No connection.
3	SELH	O	H sync switching signal which input to PD3239A. H : Input CSYNC output of M50552 (IC405). L : Input PBH output of PM3002 (IC601).
4	LD ON	O	Laser video ON/OFF switching signal output H: ON, L: OFF
5	TGH	O	Tracking operation control signal output pin The control signal supports ON/OFF of the tracking servo - mechanism operation. "H"=OFF, "L"=ON
6	SLDR POS	I	Pickup position detection switch input pin (analog signal) Divides the resistance among the switches, reads the value of the A/D input, and detects the position.
7	FREQ DET	I	Not used.
8	TBAL ERR	I	Tracking balance error signal input pin (analog signal) Signal is A/D converted and is input as the tracking offset control.
9	TILT ERR	I	Tilt sensor output signal input pin (analog signal) Inputs (0 to 5V) the tilt sensor output amplified to a 40 to 50dB signal. The signal is A/D converted and is input as the tilt sensor control. Controls the tilt motor until the signal is 2.5V.
10	CAV	O	CAV/CLV switching signal output pin "H"=CAV, "L"=CLV Connected to pin 6 of PA5013A and used as a VIDEO NR switching signal.
11	REF V	I	REFV input (from PD3239A).
12	TBAL DRV	O	Tracking offset control signal output pin Outputs the tracking offset after PWM and is used in auto tracking offset. Cycle: 910 μsec; 3 - value control H, L, Z.
13	SQ2	O	Analog audio switching signal output pin 2/R Squelch: H
14	SQ1	O	Analog audio switching signal output pin 1/L Squelch: H When in digital audio mode, the signal is output through the control of the EFM decoder IC: CXD2500AQ.
15	SI2	I	EFM decoder IC: CXD2500AQ subcode input pin Reads the subcodes of SCK2 and the signal.
16	XLAT2	O	EFM decoder IC: CXD2500AQ control latch signal output pin Sends the control command using SO3 and 2500CLK.
17	SCK2	O	EFM decoder IC: CXD2500AQ subcode read clock signal output pin Sets the clock to 96 and reads the subcode.
18	TILT DRV	O	Tilt control signal output pin Outputs the tilt drive after PWM and is used in tilt servo - mechanism.
19	S - MTOF	O	Serial data output to the mode control IC Serial
20	S - FTOM	I	Input pin of data from the mode control IC Serial Used with the data signal to the carriage generating IC.

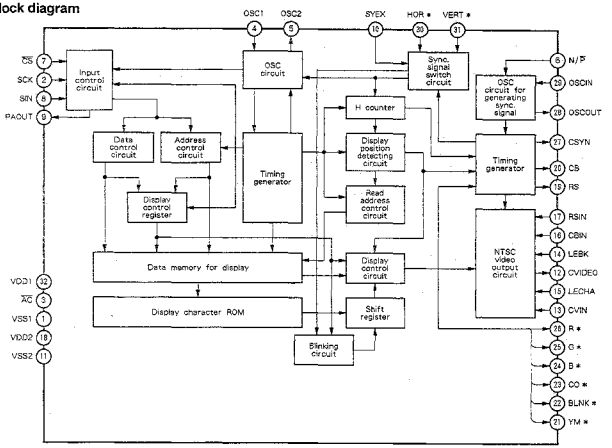
No.	Pin Name	I/O	Function
21	SCK1	I/O	Clock for serial communication with the mode control IC In the input mode except during serial communication with the mode control IC Used with the clock signal to the carriage generating IC
22	SENS	I	SENS signal input pin All of the following signals from 2500 are switched and are output to the signal: SEIN, FZC, A.S, TZC, XBUSY, FOK, GFS, COMP, COUT and OV64.
23	SCOR	I	Subcode SYNC signal input pin Inputs the subcode signal from the EFM decoder IC: CXD2500AQ when the signal is "H". Supervises the disc playback depending on the presence of the signal.
24	XCX	O	CX noise reduction of analog audio switching signal output pin. ON : L OFF : H
25	SHAKE	I/O	Pin of hand shake signal for data communication with the mode control IC This pin is a bi-directional data path which sends the data transfer timing through the I/O mode switching of the respective microcomputers.
26	XPBV	I	LD/CDV playback V - SYNC signal input pin IC basically operates in sync hronization (rising and leading edges) with the signal. Setting the signal as standard in the special CAV playback mode, generates jump timing. "L"=V - SYNC ongoing
27	CN VSS	–	GND for A/D conversion
28	XRESET	I	Reset signal input pin "L"=Reset, "H"=Cancel reset
29	XTAL IN	I	9MHz clock generation input pin
30	XTAL OUT	O	9MHz clock generation output pin
31	N.C.		No connection.
32	VSS	–	GND
33	SW1	I	Loading/tilt position detection switch input pin
34	SW2	I	Loading/tilt position detection switch input pin
35	SW3	I	Loading/tilt position detection switch input pin
36	GFS	I	Not used Processing needed when used for input
37	FG	I	Spindle motor - FG signal input pin 24 pulses per signal Divided into thirds and used inside the microcomputer.
38	DATA	I	Input pin for Phillips code decoder in the mechanism controller
39	XPBH	I	Playback H - SYNC input for Phillips code decoder
40	XPBV	I	Playback V - SYNC input for Phillips code decoder
41	GI. MIRR	O	False MIRR signal output pin to jump 1 track for LD.
42	LIMIT	O	Not used.
43	N.C.	–	Not used
44	MUTE	O	Audio system audio mute control output pin "H"=MUTE ON, "L"=MUTE OFF
45	VSQ2	O	Video output shut off signal control output pin
46	T LATCH	O	DAC & Digital PD2026 serial control latch signal output pin
47	XANA	O	Digital/analog audio switching signal output pin. H:Digital L:Analog
48	VLOCK	I	Sync. detection signal input of PBV and REFV of clear scan.
49	SENA	–	Not used
50	2500CLK	O	2500 command clock signal output pin The commands for 2500 are the following: 2500CLK; SO3 and XLAT2.
51	RFCORR	O	RF correction switching signal output pin "H"=gain up. Increases gain (# 8000 to # 8100) within the CAV.

No.	Pin Name	I/O	Function
52	SCAN CONT	O	TBC control signal output pin. H : multi-track jump ongoing. L : others
53	CD	O	CD/LD switching signal output pin H : CD, CDV - A, L : LD, CDV - V , Fixed to CD mode at STOP.
54	ACC CONT	O	Spindle acceleration signal output pin H=acceleration, L=deceleration, Z=CD, stop and play
55	GPWM	O	Spindle gain switching duty pulse signal output pin CLV inner circumference: L, outer circumference: H, CAV: L, CDV: H
56	J. TRIG	O	Track jump signal output pin. Used for single track jump . H : start of track, L : others, Width of "H" : approx. 20 μsec
57	SCK3	O	Serial 3 clock signal output pin. Reads the leading edge "H"=within 2 μsec, "L"=within 20 μsec
58	SO3	O	Serial 3 data signal output pin With the serial signal as the common signal, divides the signals into three types of latch signals (XLAT3, XLAT2 and T LATCH). LSB first
59	XLATCH3	O	Spindle servo-mechanism IC latch signal output pin
60	J F/R	O	CLV V - SYNC scan mode signal output pin
61	VSQ1	O	Video output switching signal output pin. "H" = squelch, "L" = playback video
62	XPLAY	I	Usually, held "L" in PLAY mode.
63	XPAL	O	PAL/NTSC switching signal output pin. L : At PAL video output , H : At NTSC or M - PAL video output
64	XSPLOCK	I	Spindle lock signal input pin. L : lock, H : unlock

■ M50552-249SP (MOTHER ASSY IC405)

· Control the upper character and pattern display on the TV screen

• Block diagram



• Pin Function

No.	Pin Name	Function
1	Vss1	Ground for digital system.
2	SCK	When CS pin is L, serial data of SIN is read at the rising edge of the SCK. Hysteresis input. This pin has a internal pull-up resistor.
3	$\overline{AC}$	Reset the IC internal circuit at L. This pin has a internal pull-up resistor.
4	OSC1	Connect the OSC circuit for display. Standard oscillation frequency is approx. 7MHz. Display position and character width of the horizontal direction on the TV screen are settled by this oscillation frequency.
5	OSC2	
6	N/$\overline{P}$	Switch the sync. signal generation of the NTSC or PAL systems. Generate a sync. signal of NTSC system at H and PAL system at L. This pin has a internal pull - up resistor.
7	$\overline{CS}$	Chip select pin. Set to L when performing the serial data transmission. This pin has a internal pull-up resistor.
8	SIN	Serial input the register for display control, and the memory data and address for display data. This pin has a internal pull - up resistor.
9	PAOUT	Odd parity output. Detects the 1-bit error in the 1 word of SIN.
10	SYEX	Switch the external and internal sync. signal. H:external sync. mode, L:internal sync. mode. SYEX organize the logical sum for EX register of address 243 during display control register and internal sync. priority. This pin has a internal pull-up resistor.
11	Vss2	Ground for analog system.
12	CVIDEO	Composite video signal output. Output the 2Vp-p composite video signal. Output the CVIN signal which is overlaid the character output at superimpose.
13	CVIN	Composite video signal input. Composite video signal is overlaid the character output at superimpose.
14	LEBK	Input pin for deciding blanking level of the video signal.
15	LECHA	Input pin for deciding character output level in the video signal . Character color is white.
16	CBIN	Input CB output by converting to the color burst signal level of video signal with the external circuit.
17	RSIN	Input RS output by converting to the carrier color signal level of video signal with the external circuit.
18	VDD2	+5V power supply voltage for analog system.
19	RS	Carrier color signal output for coloring the character back color. Output the signal which have phase angled to the color burst signal CB. Amplitude is 5V.
20	CB	Color burst signal output. NTSC system : 3.58MHz, PAL system : 4.43MHz Amplitude is 5V
21	YM*	Luminance signal output. When the character form ROM is decided, Polarity will be able to selected.
22	BLNK*	Character back signal output. When the character form ROM is decided, Polarity will be able to selected.
23	CO*	Character signal output. When the character form ROM is decided, Polarity will be able to selected.
24	B*	Blue input. When the character form ROM is decided, Polarity will be able to selected.
25	G*	Green input. When the character form ROM is decided, Polarity will be able to selected.
26	R*	Red input. When the character form ROM is decided, Polarity will be able to selected.
27	CSYN	Output the composite sync. signal of NTSC or PAL systems. Polarity is negative and amplitude is 5V.
28	OSCOUT	Connect the oscillation circuit for generating the sync. signal. NTSC system : 14.32MHz, PAL system : 17.73MHz.
29	OSCIN	
30	HOR*	Horizontal sync. signal input. Hysterisis input. When the character form ROM is decided, Polarity will be able to selected.
31	VERT*	Vertical sync. signal input. Hysterisis input. When the character form ROM is decided, Polarity will be able to selected.
32	VDD1	+5V power supply voltage for digital system.

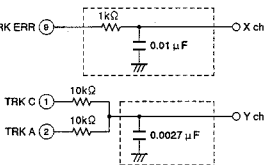
5. ADJUSTMENTS

5.1 PRELIMINARIES

• Jigs for Adjustment

- CD test disc (STD-901 or STD-902)
- LD test disc (GGV1003 and GGV1007)
- (−) screwdriver (medium)
- (−) screwdriver (small)
- Hexagonal wrench driver (straight type, size: 3mm)
- Resistors (10kΩ × 2, 47kΩ)
- Dual-trace oscilloscope (with delay)
- AF oscillator
- Frequency counter
- TV monitor
- Low-pass filter

Use the low-pass filters below in the coarse centering adjustment 2. and fine centering adjustment 6. when the S/N of the waveform is hard to observe.



• Rack Assy During Centering Adjustment

The S - IN position (without hitting the mechanism stopper) of the rack assy during centering adjustment is indicated below.

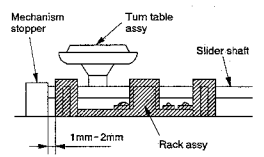


Fig. 1 Right side view

• Adjustment Locations

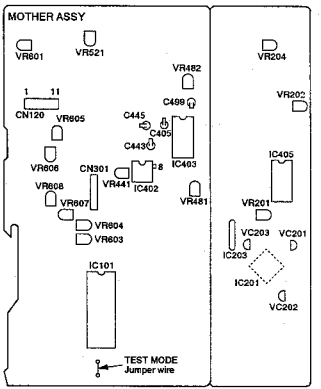
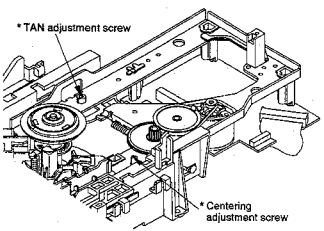


Fig. 2 MOTHER assy section



* : As the adjustment range of both the TAN and centering adjustment screws is only ± 90° form the center, do not turn the screws beyond this range.

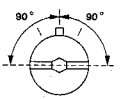


Fig. 3 TILT base section

• Test Mode

Before activating Test Mode: With the power ON, press the [MODE] key of the unit to set to Normal Mode, then turn the power off.

1) Activating the Test Mode

① While holding the [15] key on the front panel down, press the POWER key for 5 seconds.

② With the power ON, press the [ESC] key and the [TEST] key in sequence on the service remote control unit.

③ While power is ON, connect the Test mode jumper wire (Fig. 2) to the GND for about one second.

Test Mode can be activated by performing either of ①, ②, or ③. When the Test Mode is activated, the 7 - segment LED display blinks showing 8 8.

2) Canceling the Test Mode

1. Turn the power OFF.

• Key Operation in the Test Mode

Player Status	Key Operation	Function	Remarks
Tray Open	⏮/⏭ SKIP (Refer to Note 1)	⏮ : Shifts the tray in the closed direction and also raises the turn table while it is held down. ⏭ : Shifts the tray in the open direction and also lowers the turn table while it is held up.	
Tray Open	▶ Play	Clamps	
Clamp	▶ Play	Turns the disc through TRK Servo OFF	TRK-OFF
TRK Servo OFF	▶ Play	TRK Servo ON (Each pressing of the ▶ Play key toggles between TRK servo OFF and ON.)	TRK-ON
TILT Neutral	(* 1) + SPEED-UP	TILT Servo ON	T-□:ON
TILT ON	(* 2) - SPEED-DOWN	TILT Neutral	T-□:N
TILT Neutral or ON	⏮/⏭ SKIP	Setting TILT Servo to OFF, can force TILT to move.	T-1 to T-E
Clamp	◀◀/▶▶ SCAN	Can force the slider to move	S-LD S-CDV S-CD S-IN
Play	❙❙ PAUSE	Still	
Play	■ STOP	Stop	
Stop	▲ OPEN	Open	
Play	(* 3) [+10] ⇩ [0] to [9] ⇩ [▶ PLAY]	Set to SEARCH lead address input mode. Designates the SEARCH lead address through keys 0 to 9. Press the CLEAR [C] key if the designated address is incorrect. Searches the designated address upon pressing the PLAY key.	

Note 1 : Press SKIP (⏮/⏭) keys after the tray is set to open state by pressing OPEN (▲) key.
In tray open state, pressing PLAY (▶) key causes is to TILT control state and SKIP keys cannot function properly.

Note 2 : Key operations (* 1) , (* 2) and (* 3) correspond to front panel operations as follows.
(* 1) : MPX key
(* 2) : [13] key
(* 3) : [11] → [1] to [9] and [10] (= [0]) → [▶ Play]

Note 3 : For forcible switching of the video output format, use the [14] key. (Remark TS-0, TS-2, TS-3)
TS-0 : NTSC , TS-2 : Quasi-PAL , TS-3 : PAL

Note 4 : Focus balance switching
Each pressing of the [MODE] key of the unit toggles between TRKG ERR MAX (F-0) and CROSSTALK BEST (F-1).

Note 5 : Screen display ON/OFF
Each pressing of the [12] key of the unit toggles between ON and OFF. (ON is the initial setting.)

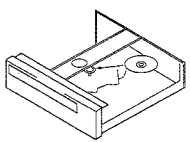
Note 6 : Connect the service remote control unit to the REMOTE CONTROL JACK (JA23) of the MDKI ASSY.

• Player Operation in the Test Mode

Operate the player by selecting a test mode function with the keys on the player or on the remote control unit.

• CD PLAYBACK

① Place the CD disc on the turn table.



② Press the PLAY (▶) key once.
(Twin gear starts to move.)

③ Push the cam plate (Fig. 4) in the direction of the arrow and wait until the CD disc is clamped.

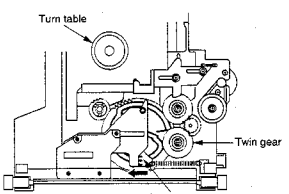
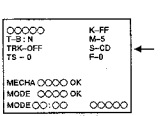


Fig. 4

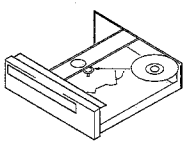
④ Press the [◀◀] or [▶▶] keys to appear "S - CD" on the TV screen display.



TV screen display

⑤ Press the PLAY (▶) key twice, disc will be normally playbacked.

• LD PLAYBACK

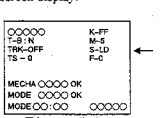


① Press the PLAY (▶) key once. (Twin gear starts to move.)

② Press the SKIP REV (|◀◀) key to raise the turn table (spindle motor section) while pressing the cam plate (Fig. 4) in the direction of the arrow.
Raise it to the position where the LD disc can be easily placed on the turn table.
If the turn table is raised too high, lower it with the SKIP FWD (▶▶|) key.

③ Place the LD disc on the turn table and press the PLAY (▶) key once to clamp the disc.

④ Press the [◀◀] or [▶▶] keys to appear "S - LD" on the TV screen display.



TV screen display

⑤ Press the PLAY (▶) key twice, disc will be normally playbacked.

5.2 SERVICE MODE

1. To Enter Service Mode

(1) Turn on the power to the player by pressing the power key for 5 seconds while holding down the play key.

- When Service mode is activated, the 7-segment display shows 00, 11, ...99 in sequence and the LED indicators light in sequence.

2. To Cancel Service Mode

(1) Turn off the power.

3. Function

The following function is operated in service mode.

(1) Clearing the error history

- Press the clear key on the remote control unit in service mode.

4. Displays

The following items are displayed in service mode.

- Total number of songs to be played (incremented with each music-select operation)
- Total playback time
- Error history
- Error codes for the 8 latest errors
- Connection ON/OFF of simple alternate operation
- A/D conversion level for simple alternate operation
- EEPROM read-write check

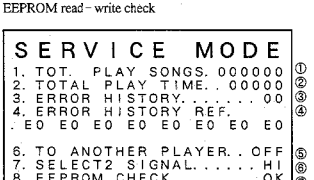


Fig. 5 Displays

① Total number of songs to be played (0 to 999999).
Displays the number of search operations. A repeated search, performed when pause is released in the auto-pause function, is also counted as one.

② Total playback time in hours (0 to 99999).
Displays the total time during playback or pause.

③ Error history (0 to 99).

④ Latest error data (error codes for the 8 latest errors).

⑤ Connection ON/OFF of simple alternate operation.

- ON is displayed if a cable is inserted into the simple alternate operation jack. (It does not mean that another unit is actually connected via the cable.)

⑥ A/D conversion level for simple alternate operation

- Regardless of whether or not a cable for the simple alternate operation is connected, the current A/D value is displayed. HI is displayed when both players are inactive. MID is displayed when one of the players is active. LO is displayed when both players are active. (As it is always inactive in Service Mode, LO will be displayed only when trouble occurs in the circuits.)

⑦ EEPROM read-write check

- Executed upon power-up or when Service mode is activated. OK is displayed if data can be correctly written to the EEPROM and can be correctly read from the EEPROM. NG is displayed if data cannot be written correctly or can not be read correctly.

- Upon delivery from the factory, ③ Error history and ④ Latest error data are cleared, but ① Total number of songs to be played and ② Total playback time in hours are not cleared. The values of ① and ② may therefore not be 0 even upon your initial use.

- Service Mode normally displays a PAL-system picture. It will be NTSC only in the following case.
  - When Service mode is activated after playing an NTSC disc with NTSC selected in 7. TV SYSTEM of the Function setup menu.

5. Error Code

Code No.	Description
E0	Normal
E1	Not used
E2	Not used
E3	Partial short
E4	Not used
E5	Not used
E6	Unread Phillips code.
E7	Defect in the FG.
E8	Loading error
E9	Slider error
EA	Clamp error
EB	Spindle error
EC	Focus error
ED	Search time over
EE	TOC read time over (only at CD and CDV)
EF	Emergency (disapprove of recovery)

6. Regarding Video Output (PAL/NTSC)

- The FUNCTION SETUP picture is always output in PAL.
- If the power is on right after connection to the AC output, a PAL - system picture is obtained.

(1) If 1. PAL has been selected in FUNCTION SETUP:
- During STOP: A PAL - system picture is output.
- While loading, searching or playing an NTSC disc: The picture is converted to PAL and output.

(2) If 2. NTSC has been selected in FUNCTION SETUP:
- During STOP: The video is output in the same system as the previous disc.
  After a PAL disc was played: Video is output in PAL.
  After an NTSC disc was played: Video is output in NTSC.
- While loading, searching or playing a disc:
  Video is output in the same system as that of the disc.

Notes:
- If the unit is connected to a PAL - only TV, select 1. PAL.
- If the unit is connected to a trident (multiscan format) TV, select 2. NTSC. (in automatic switching mode)

5.3 LENS CLEANING

1. Remove screws to remove the bonnet.
2. In the test mode, move the pickup to under the lens cleaning window of the clamper arm with SCAN key.
   - Right after Test Mode is activated, the pickup is located near the inner periphery. Move it toward the outer periphery normally by pressing the SCAN FWD key (▶▶).
   - Owing to a mechanism limitation, the pickup cannot be moved in tray - open status.
3. Push the lens pad with finger to fix it and perform the lens cleaning.

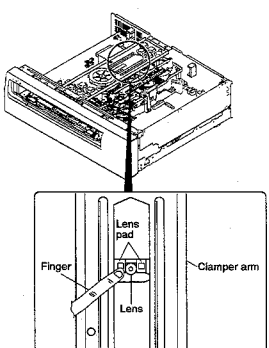


Fig. 6

• Cleaning Conditions

1. Lens cleaning liquid GEM1004 and cleaning paper GED - 008 shall be used.
2. Lens face shall be cleaned by the paper rubbing ten times of rotation with 10 - 20 grams of pressure.

Note : Take sufficient care, as a plastic lens is used.

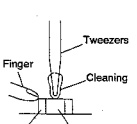
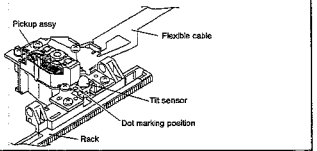
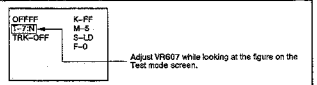
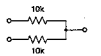
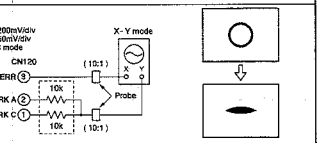
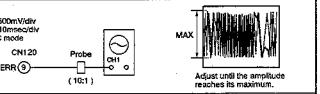
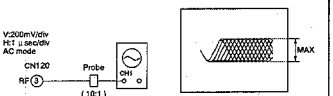
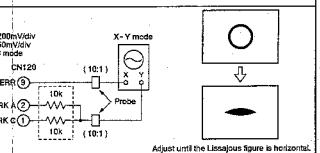
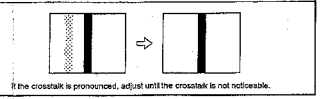
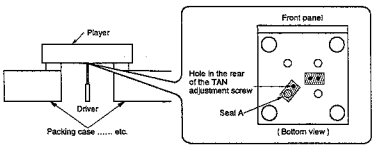
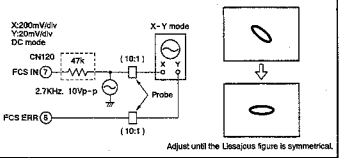
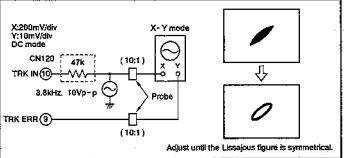
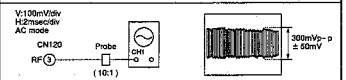
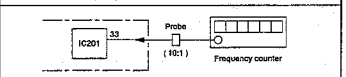
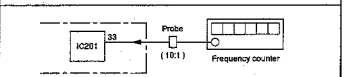
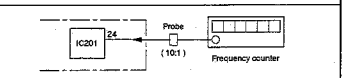
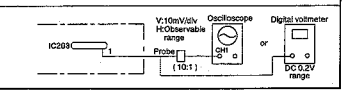


Fig. 7

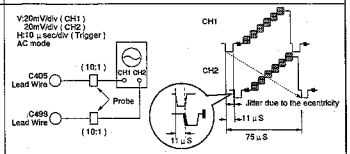
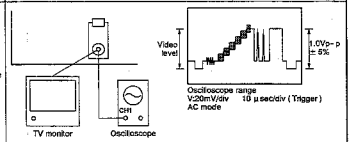
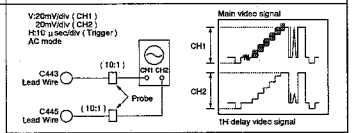
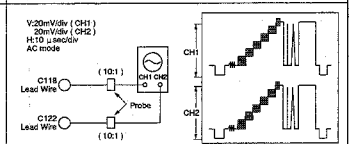
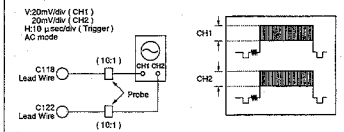
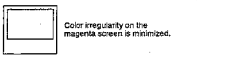
5.4 ADJUSTMENT TABLE

NOTE : All VRs and CNs(connectors) in the table are parts of MOTHER ASSY.

	Adjustment name	Adjustment point	Measuring equipment and jigs	Measurement point	Player condition	Adjustment procedure	Waveform and connection diagram
1	Tilt Gain Adjustment	VR608	———	Dot marking of Tilt sensor	• Power OFF	Adjust the position of VR608 (Tilt gain VR) according to the color of dot marking. Red : Turn to clockwise Clear : Center Blue : Turn to counterclockwise	
2	Tilt Offset Check and Adjustment	VR607	• TV monitor	Tilt indication on Test mode screen	• Power ON • Test mode • Disc not installed	1. Check if the tilt indication on the Test mode screen is at T-6 to T-8. 2. If the tilt indication is not at T-6 to T-8, adjust VR607 until the tilt indication reaches T-6 to T-8.	
3	Coarse centering adjustment	Tilt base centering adjustment screw	• Oscilloscope • STD-901 or STD-902 • MIX resistor 	CN120 X: 9 Pin (TRK ERR) Y: 1+2 Pin (TRK SUM)	• Test mode TRK Servo Open Tilt Servo ON • Innermost track of STD-901 or STD-902 which does not come in contact with the mechanical stopper.	1. Move the slider until it does not come in contact with the mechanical stopper at the slider position indication S-IN. 2. Observe TRK ERR (Xch) and TRK SUM (Ych) at the X-Y mode during TRK Servo Open. 3. Turn the centering adjustment screw until the Lissajous figure is horizontal.	
4	FCS balance adjustment (1) TRK ERR MAX	VR605	• Oscilloscope • STD-901 or STD-902	CN120 9 Pin (TRK ERR)	• Test mode TRK Servo Open Tilt Servo ON • Inner track of STD-901 or STD-902	1. Observe TRK ERR at CH1 of the oscilloscope during TRK Servo Open. 2. Adjust VR605 until the amplitude of the waveform reaches its maximum.	
5	FCS balance adjustment (2) RF MAX	VR606	• Oscilloscope • STD-901 or STD-902	CN120 3 Pin (RF)	• Test mode TRK Servo Close Tilt Servo ON • Inner track of STD-901 or STD-902	1. Close the TRK Servo and observe RF at CH1 of the oscilloscope. 2. Adjust VR606 until the amplitude of the waveform reaches its maximum and the envelope is very clear.	
6	Tangential direction angle adjustment	Tilt base TAN adjustment screw	• Oscilloscope • STD-901 or STD-902	CN120 3 Pin (RF)	• Test mode TRK Servo Close Tilt Servo ON • Inner track of STD-901 or STD-902	1. Observe RF at CH1 of the oscilloscope during TRK Servo Close. 2. Adjust the TAN adjustment screw until the amplitude of the waveform reaches its maximum and the envelope is very clear.	
7	Fine centering adjustment	Tilt base Centering adjustment screw	• Oscilloscope • STD-901 or STD-902	CN120 X: 9 Pin (TRK ERR) Y: 1+2 Pin (TRK SUM)	• Test mode TRK Servo Open Tilt Servo ON • Innermost track of STD-901 or STD-902 which does not come in contact with the mechanical stopper.	Perform fine centering adjustment by following the same procedure as in "(3) Coarse centering adjustment".	
8 -1	Crosstalk check and Tilt offset adjustment	VR607	• TV monitor • GGV1003	Crosstalk check screen	• Test mode TRK Servo Close Tilt Servo ON • GGV1003 #115 STILL	1. Search for address 115 of GGV1003 and still the address. 2. Check the crosstalk . If the crosstalk is pronounced, adjust VR607 until the crosstalk is not noticeable.	

	Adjustment name	Adjustment point	Measuring equipment and jigs	Measurement point	Player condition	Adjustment procedure	Waveform and connection diagram
8 -2	When the crosstalk is still noticeable in spite of the adjustment in (8-1), use a hexagonal wrench driver (straight type, size: 3 mm) to adjust the TAN adjustment screw on the bottom side of the player through the GGV1003 #115 STILL screen. Afterwards, perform the adjustment procedures from (7).					Remove seal A (marked with ▨) for adjustment. Return it to its original position when the adjustment is completed.	
9	FCS Servo loop gain adjustment	VR604	• Oscilloscope • GGV1003 • AF Oscillator • Resistor (47kΩ)	CN120 X: 7 Pin (FCS IN) Y: 6 Pin (FCS ERR)	• Test mode TRK Servo Close Tilt Servo ON • GGV1003 #15,000 STILL	1. Search for address 15,000 of GGV1003 and still the address. 2. Xch: Connect the resistor (47kΩ) to the channel and connect to FCS IN. Ych: Connect to FCS ERR. 3. Connect the AF oscillator between Xch and the 47kΩ resistor, and adjust VR604 until the Lissajous figure is symmetrical.	
10	TRK Servo loop gain adjustment	VR603	• Oscilloscope • GGV1003 • AF Oscillator • Resistor (47kΩ)	CN120 X: 10 Pin (TRK IN) Y: 9 Pin (TRK ERR)	• Test mode Stop mode or TRK Servo Close Tilt Servo ON • GGV1003 #15,000 STILL	1. Xch: Connect the 47kΩ resistor to channel and connect to TRK IN. Ych: Connect to TRK ERR. 2. Connect the AF oscillator between Xch and the 47kΩ resistor and note the tilt angle against the horizon with the disc in the stopped state. 3. Search for address 15,000 of GGV1003 and still the address. 4. Set the disc PLAY mode (TRK servo closed, TILT on). Adjust VR603 so that the tilt angle of the waveform will be the same as the tilt angle noted in step 3.	
11	RF level adjustment	VR601	• Oscilloscope • GGV1003	CN120 3 Pin (RF)	• Test mode TRK Servo Close Tilt Servo ON • GGV1003 #15,000 STILL	1. Search for address 15,000 of GGV1003 and still the address. Observe RF at CH1 of the oscilloscope. 2. Adjust VR601 until the RF amplitude is 300mV ± 50mVp-p.	
12	NTSC reference clock adjustment	VC202	• Frequency counter • GGV1003	IC201-33 Pin (TBC CLK)	• NTSC PLAY mode Play the NTSC disc. or Select the NTSC mode with the SYSTEM button of the front panel. (*1)	Adjust 4fsc frequency (14.31818MHz) ± 100Hz.	
13	PAL reference clock adjustment	VC201	• Frequency counter • GGV1007	IC201-33 Pin (TBC CLK)	• PAL PLAY mode Play the PAL disc. or Select the PAL mode with the SYSTEM button of the front panel. (*1)	Adjust 910 fH frequency (14.21875MHz) ± 100Hz.	
14	PAL reference clock adjustment	VC203	• Frequency counter • GGV1007	IC201-24 Pin (OSD CLK)	• PAL PAUSE mode Play the PAL disc and set to PAUSE state. or Select the PAL mode with the SYSTEM button of the front panel. (*1)	Adjust 4fsc frequency (17.734475MHz) ± 100Hz	
15	PAL VCXO ERR OFFSET Check	VC201	• Oscilloscope • GGV1007 • Digital volt meter	IC203-1 Pin (VCXO ERR)	• Play the PAL disc	Play the PAL disc and check that the voltage of VCXO ERR at IC203-1 pin is 0V ± 100mV. If the specified voltage is not obtained, adjust VC201 so that the voltage becomes 0V ± 100mV. Note : The adjustment of VC201 in this step should have priority over that in step 12.	

*1 ► PAL mode ► NTSC mode ► MOD PAL mode ┐ (cyclic change)

	Adjustment name	Adjustment point	Measuring equipment and jigs	Measurement point	Player condition	Adjustment procedure	Waveform and connection diagram
16	VCO center frequency adjustment	VR481	• Oscilloscope • GGV1007	CH1: C405 lead wire CH2: C499 lead wire	• Normal mode • GGV1007 #4,000 STILL	Place a trigger in CH1 and adjust until the center of the CH2 video signal jitter is 75 μsec (1H + 11 μsec) ± 1.4 μsec compared to the CH1 video signal.	
17	Video level adjustment	VR482	• TV monitor • Oscilloscope • GGV1003	Video output terminal	• Normal mode • GGV1003 #19,900 STILL	Connect a 75 Ω resistor to the VIDEO output terminal (possibly by connecting to the monitor) and adjust until the sync tip to 100% white level is 1Vp-p ± 5% at the white (100%) signal.	
18	1H delay video level adjustment	VR441	• Oscilloscope • GGV1003	CH1: C443 lead wire CH2: C445 lead wire	• Normal mode • GGV1003 #19,900 STILL	Adjust until the sync tip to 100% white level at the white (100%) signal is the same as in CH1 and CH2.	
19	VPS error level adjustment	VR521	• TV monitor • GGV1003	TV monitor	• Normal mode • GGV1003 #8,000 STILL (Magenta screen)	Adjust until the color irregularity on the magenta screen is minimized.	
20	MOD Y-signal level adjustment	VR204	• Oscilloscope • GGV1003	CH1: IC205-2 Pin CH2: IC205-1 Pin	• Normal mode • GGV1003 #19,900 STILL	Adjust until the sync tip to 100% white level at the white (100%) signal is the same as in CH1 and CH2.	
21	MOD C-signal level adjustment	VR202	• Oscilloscope • GGV1003	CH1: IC205-2 Pin CH2: IC205-1 Pin	• Normal mode • GGV1003 #8,000 STILL	Adjust until the chroma signal level at the magenta signal is the same as in CH1 and CH2.	
22	PAL inverting SC phase adjustment	VR201	• TV monitor • GGV1007	TV monitor	• Normal mode • GGV1007 #6,500 STILL (Magenta screen)	Adjust until the color irregularity on the magenta screen is minimized.	

6. PARTS LIST FOR PACKING AND EXPLODED VIEWS

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

6.1 PACKING

Mark	No.	Description	Part No.
NSP	1	Caution	VRR1009
NSP	2	Caution (EW)	VRM1027
	3	Operating instructions (English/French/German/Italian)	DRE1021
	4	Operating instructions (Dutch/Swedish/Spanish)	DRF1001
NSP	5	Polyethylene bag	VHL-014
	6	Video cable	VDE-056
	7	Cord with plug	VDE-055
	8	Control cord (mini 3.5)	DDE1055
NSP	9	Polyethylene bag	Z21-029
	10	Pad (F)	DHA1299
	11	Pad (R)	DHA1305
	12	Mirror mat	VHL1006
	13	Packing case	DHG1609
	14	AC power cord	DDG1065
NSP	15	Tag	DRW1330

6.2 EXTERIOR SECTION

Mark	No.	Description	Part No.
	1	Guide plate (L)	VNE1805
	2	Guide plate (R)	VNE1806
	3	Lock plate spring	VBH1188
	4	Lock plate	VNL1513
	5	CD tray	VNK1992
	6	Tray assy-S	DXX2211
NSP	7	LD tray	DNK3071
	8	Disc pad	VEC1657
	9	Disc pad (C)	VEC1658
NSP	10	Label	VRW1289
	11	Bonnet S	DXX2156
	12	Tray panel support	DNH1928
	13	• • • • •	
NSP	14	Tape D	DED1076
	15	Screw	BPZ26P060FCU
	16	Tray panel	DNK3085
	17	MDK1 assy	DWG1448
	18	PCB stay	DND1142
NSP	19	Cushion	VEC1618
NSP	20	Spacer	VEC1585
	21	• • • • •	
NSP	22	PCB holder	VNE1830
	23	Screw	BPZ30P060FCU
	24	Screw	BPZ30P080FCU
	25	Screw	BBZ30P080FCC
	26	Screw	FBT40P080FZK
	27	Screw	BBT30P080FCC
	28	Screw	VBA1032
	29	Tray rubber	VEB1091
	30	Caution label	DRW1634
	31	Caution label (HE)	VRW1297
	32	Caution label (G)	VRW-329
	33	Plastic rivet	DEC1713
	34	Fiber washer	VEC1254

6.3 TOP VIEW SECTION

Mark	No.	Description	Part No.
	1	Clamper holder	VNL1514
	2	Rubber sheet	VEB1114
	3	Thrust holder	VNL1663
	4	Clamper head	VNL1615
	5	Clamper	VNL1515
	6	Clamper spring	VBH1192
	7	Clamper arm	VNE1804
	8	Stabilizer	VNE1807
	9	Rack assy	VWT1099
	10	Carriage shaft	VLL1434
NSP	11	Side stay (R)	VNE1810
NSP	12	Front angle	VNE1808
	13	Screw	CPZ20P050FMC
	14	Screw	BBZ30P080FCC
	15	Screw	IBZ30P080FMC
	16	Screw	IPZ30P060FMC
	17	Screw	PCZ30P060FMC
	18	Screw	BBZ30P060FCC
	19	Screw	BBZ30P060FMC
	20	Panel stopper	DNH1987
	21	Pierce hold	DEC1678
NSP	22	Earth plate	VNE1518
	23	Washer	DEC1743

6.4 FRONT PANEL SECTION

Mark	No.	Description	Part No.
NSP	1	Front panel	DNK3004
NSP	2	Display lens	DAH1759
NSP	3	Display sheet	DAH1761
	4	PW button	DAC1803
	5	Illumination key	DAC1805
	6	Stop button	DAC1804
	7	5 key	DAC1800
	8	10 key	DAC1801
	9	15 key	DAC1802
	10	Screw	BPZ26P060FCU
	11	• • • • •	
	12	Name plate	VAM1032
	13	Disc pad B	DED1031
NSP	14	SWBF assy	DWX1512
NSP	15	SWBS assy	DWX1513
NSP	16	SWBT assy	DWX1514
NSP	17	PSWB assy	DWX1517
	18	FRLB assy	DWG1446
	19	Front panel assy-S	DXX2244

6.5 BASE SECTION

Mark	No.	Description	Part No.
	1	MOTHER assy	DWX1535
	2	AUDB assy	DWV1168
	3	SYPS assy	DWR1214
	4	Tray stopper	VNL1519
	5	VSBA assy	DWX1536
⚠	6	2P inlet assy	DKX1008
	7	Rear panel	DNC1378
	8	PCB cushion	VEC1573
NSP	9	Cord clamper	Z09-060
NSP	10	PCB holder	VEC1174
⚠	11	Power transformer (T1)	DTT1114
⚠	12	Fuse (FU1, FU2) (T3.15A)	REK-105
NSP	13	P. plate holder	PNY-405
NSP	14	Side stay (L)	VNE1809
NSP	15	Caution label (F)	VRW-328
	16	Insulator assy (Front)	DXA1490
NSP	17	Base chassis	VNA1255
	18	Insulator assy (Rear)	DXA1491
	19	Screw	BBZ30P080FCC
	20	Screw	BBZ30P040FMC
	21	Screw	BCZ40P060FNI
	22	Screw	BCZ30P080FMC
NSP	23	Heat sink	VNE1854
	24	Flexible cable (23P)	VDA1409
	25	Connector	PF03PP-C65
⚠	26	Fuse (FU3) (T1A)	REK-100
	27	Screw	BBT30P080FCC
NSP	28	PC support	VEC1415
	29	Screw stopper	DNH1939

6.6 MECHANISM ASSY (LOWER SECTION)

Mark	No.	Description	Part No.
	1	Mechanism base	VNK1990
	2	• • • • •	
	3	Clamp cam	VNL1621
	4	Shaft holder	VNE1817
	5	Cam plate	VNL1511
	6	CAS spring	VBH1190
	7	Cam gear	VNL1507
	8	CD plate	VNL1512
	9	CDP spring	VBH1191
	10	Rubber belt	VEB1184
	11	Gear pulley	VNL1510
	12	Twin gear	VNL1508
	13	Center gear	VNL1509
	14	L-SW lever	VNL1504
	15	C-SW lever	VNL1505
	16	R-SW lever	VNL1506
NSP	17	LOSB assy	VWG1307
	18	Synchro gear assy	VXA1822
	19	Roller	VNL1042
NSP	20	LOMB assy	VWG1308
	21	Loading motor assy	VXX1712
NSP	22	Slider motor	VXM1033
	23	Motor pulley	PNW1643
	24	Screw	Z39-019
	25	Screw	BMZ26P040FMC

6.7 MECHANISM ASSY (UPPER SECTION)

Mark	No.	Description	Part No.
	1	CA belt	VEB1077
	2	CA pulley (2)	VNL1496
	3	CA gear (3)	VNL1497
	4	Tilt base	VNL1499
	5	CA-SW lever	VNL1498
NSP	6	CAMB assy	VWG1306
	7	CRG motor assy	VXX1261
NSP	8	Slider motor	VXM1033
	9	CA pulley (1)	VNL1197
NSP	10	PKSB assy	VWG1305
	11	Radial spring	VBH1201
	12	Thrust spring	VBH1200
	13	Tilt tension spring	VBH1187
NSP	14	FG assy	VWG1304
	15	FG base	VNL1503
	16	Y gear	VNL1501
	17	Tilt cam spring	VBH1189
	18	Tilt cam	VNL1502
	19	Spindle motor assy	VXA2108
	20	Centering hub	VNL1174

Mark	No.	Description	Part No.
	21	Centering spring	VBH1083
NSP	22	Rubber sheet	VEB1103
NSP	23	Turn table assy	VXA1283
NSP	24	Oil stopper	VBF1002
NSP	25	Spindle motor	VXM1053
	26	Motor base	VNE1803
	27	Screw	BMZ26P040FMC
	28	Screw	ABZ30P300FMC
	29	Screw	PMA30P050FMC
	30	Washer	WT26D060D025
	31	Housing assy (2P)	VKP2020

6.8 RACK ASSY

Mark	No.	Description	Part No.
NSP	1	Sensor stay	VBK1036
NSP	2	Tilt sensor	SG-302
NSP	3	Pickup assy	VWY1036
	4	Rack	VNL1495
	5	Tan. base	VNL1494
	6	Screw	PBB26P080FMC
	7	Screw	PMA20P060FMC
	8	Screw	PMA20P080FMC
	9	Screw	PMH20P040FMC
	10	Screw	SMZ20H120FZK

7. PCB PARTS LIST

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits(any digit apart from 0), such as 560 ohm and 47k ohm(tolerance is shown by J=5%, and K=10%).

560 Ω → 56 × 10¹ → 561 ····· RD1/8PM 5 6 1 J
47k Ω → 47 × 10³ → 473 ····· RD1/4PS 4 7 3 J
0.5 Ω → 0R5 ····· RN2H 0 R 5 K
1 Ω → 010 ····· RS1P 0 1 0 K

Ex.2 When there are 3 effective digits(such as in high precision metal film resistors).

5.62k Ω → 562 × 10¹ → 5621 ····· RN1/4PC 5 6 2 1 F

Mark	No.	Description	Part No.
LIST OF ASSEMBLIES			
NSP		FRPB ASSY	DWM1451
	├	FRLB ASSY	DWG1446
NSP	├	SWBF ASSY	DWX1512
NSP	├	SWBS ASSY	DWX1513
NSP	├	SWBT ASSY	DWX1514
NSP	└	PSWB ASSY	DWX1517
NSP		MDAB ASSY	DWM1453
	├	MDKI ASSY	DWG1448
	└	AUDB ASSY	DWY1168
NSP		PWSB ASSY	DWM1465
	├	SYPS ASSY	DWR1214
NSP	└	YSBA ASSY	DWX1536
		MOTHER ASSY	DWX1535
NSP		MECHANISM ASSY	VWY1081
◉	└	MACB ASSY	VWM1250
NSP	├	PG ASSY	VWG1304
NSP	├	PKSB ASSY	VWG1305
NSP	├	CAMB ASSY	VWG1306
NSP	├	LOSB ASSY	VWG1307
NSP	└	LOMB ASSY	VWG1308
FRLB ASSY			
SEMICONDUCTORS			
		IC1001	MC14489P
		Q1001-Q1004	DTC124ES
		D1001	LB-602DK1
		D1003	SLH-34DC3H3
		D1002	SLH-34MC35H3
		D1005, D1006	SLH-34YC35H3
		D1007-D1012, D1019-D1021	SLY-31DC3
		D1013-D1018, D1022-D1024	SLY-31MC3
SWITCHES			
		S1018-S1024, S1026, S1028	RSG1030
CAPACITORS			
		C1000	CEJA101M10
		C1001	CKPUYF103Z25

Mark	No.	Description	Part No.
RESISTORS			
		All Resistors	RD1/6PM□□□J
OTHERS			
		9P CABLE HOLDER	51048-0900
	CN504	3P JUMPER CONNECTOR	52151-0310
	CN502	4P JUMPER CONNECTOR	52151-0410
	CN503	7P JUMPER CONNECTOR	52151-0710
	J32	9P JUMPER WIRE	D20PDD0915G
	J31	9P JUMPER WIRE	D20PDY0915G
SWBF ASSY			
SWITCHES			
		S1001-S1005	RSG1030
OTHERS			
		6P CABLE HOLDER	51048-0600
SWBS ASSY			
SWITCHES			
		S1006-S1010	RSG1030
OTHERS			
		6P CABLE HOLDER	51048-0600
		8P CABLE HOLDER	51048-0800
	J34	6P JUMPER WIRE	D20PDD0610G
SWBT ASSY			
SWITCHES			
		S1011-S1015	RSG1030
OTHERS			
		8P CABLE HOLDER	51048-0800
	CN506	2MM PITCH BOTTOM CONNECTOR	BTMK09S-1S

Mark	No.	Description	Part No.
PSWB ASSY			
SEMICONDUCTORS			
	Q1005		DTA124ES
	D1026		SLH-34VC35H3
SWITCH			
	S1017		RSG1030
RESISTORS			
	All Resistors		RD1/6PM□□□J
OTHERS			
	9P CABLE HOLDER		51048-0900
MDKI ASSY			
SEMICONDUCTORS			
	IC101 (HD6473714P)		DYW1395
	IC102		M6M80011AL
	IC103		PST529D
	Q119, Q121		2SA933S
	Q118, Q120		2SC1740S
	Q101		DTA144ES
	Q102		DTC114ES
	D101, D106-D109, D111, D112		1SS254
FILTER			
	F111		DTH1157
CAPACITORS			
	C125		CCSQCH470J50
	C107		CEAL100M16
	C104, C117		CEAS101M10
	C101		CEAS221M16
	C106		CKSQYF102Z50
	C102, C103, C105, C118, C120		CKSQYF103Z50
	C127, C128		CKSQYF103Z50
	C108		CKSQYF474Z16
RESISTORS			
	R102		RA13T103J
	R104		RA7T103J
	R101		RA8T103J
	R183		RD1/6PM102J
	R187		RN1/6PQ1002F
	R186		RN1/6PQS101F
	Other Resistors		RS1/10S□□□J
OTHERS			
	3P CABLE HOLDER		51048-0300
	4P CABLE HOLDER		51048-0400
	7P CABLE HOLDER		51048-0700
	10P CABLE HOLDER		51048-1000
	CN203 KR CONNECTOR 3P		B3B-PH-K
	J23 3P JUMPER WIRE		D20PDY0335G
	J21 4P JUMPER WIRE		D20PDY0435G
	J22 7P JUMPER WIRE		D20PDY0740G
	J24 10P JUMPER WIRE		D20PDY1040G
	MINI JACK 3P		DKN1057

Mark	No.	Description	Part No.
	JA23 JACK/12V		PKN1004
	PCB BINDER		YEF1040
	64P SHRINK IC SOCKET		VKH1004
	SCREW TERMINAL		VNE1841
	X101 CERAMIC RESONATOR(8MHz)		VSS1031
AUDB ASSY			
SEMICONDUCTORS			
	IC204, IC205		BA15218
	IC203		BA15218N
	IC201		CXD2500BQ
	IC214		NJM4558D
	IC210		NJM78L05A
	IC208		NJM78M08FA
	IC209		NJM79L08A
	IC202		PD2026B
	Q224		2SA933S
	Q208, Q209, Q220		2SC2412K
	Q204, Q205		2SD2144S
	Q203, Q207, Q210, Q212-Q216		DTA124EK
	Q221		DTA124EK
	Q206, Q225		DTC124EK
	D202, D207		DAN202K
	D210, D211		ERA83-006
	D201		PCS4M
COILS AND FILTERS			
	L201, L202, L204-L206		LAU010J
	L203		LAU220J
	F203		VTH-005
	F201		VTH1016
	L207, L208		VTH1024
CAPACITORS			
	C268, C269		CCCCH151J50
	C264, C265		CCCCH221J50
	C232		CCSQCH150J50
	C244, C245		CCSQCH220J50
	C220, C221		CCSQCH271J50
	C258-C263		CCSQCH390J50
	C222, C223		CEANP100M16
	C218, C219, C274, C275, C301		CEANP220M10
	C215		CEANPR47M50
	C228		CEAS100M50
	C203, C208, C211, C230		CEAS470M10
	C252, C253, C270-C273, C283		CEAS470M10
	C225, C226, C247, C249		CEAS470M16
	C255, C257		CEAS471M6R3
	C266, C267		CFTXA102J50
	C287		CKSQYB682K50
	C206, C213, C216, C217, C231		CKSQYF103Z50
	C234, C246, C248, C251, C286		CKSQYF103Z50
	C320, C323, C324		CKSQYF103Z50
	C204, C209, C212, C254, C288		CKSQYF104Z25
	C310, C311		CKSQYF104Z25
	C301, C224		CKSQYF473Z25
	C202		CQMA152J50

Mark	No.	Description	Part No.
RESISTORS			
	R271, R272		RN1/10SE153D
	R259~R262		RN1/10SE473D
	Other Resistors		RS1/10S□□□J
OTHERS			
	CN109	5P TOP POST	B5P-SHF-1AA
	CN105	6P JUMPER CONNECTOR	S8KK06S-4
	CN102	7P JUMPER CONNECTOR	S8KK07S-4
	CN104	9P JUMPER CONNECTOR	S8KK09S-4
	PCB BINDER		VEF1040
	JA11	2P PIN JACK	VKB1060
	SCREW TERMINAL		VNE1841
	X201	CRYSTAL RESONATOR (16MHz)	VSS1057
SYPS ASSY			
SEMICONDUCTORS			
⚠	IC205		ICP-N10
⚠	IC201, IC202, IC204		ICP-N15
⚠	IC203, IC206		ICP-N20
⚠	IC2		NJM4558D
⚠	IC1		NJM78M05FA
⚠	IC3		NJM78M09FA
	Q22, Q23, Q29, Q5		2SA933S
⚠	Q2 , Q6		2SB1185
⚠	Q31		2SB1240
⚠	Q25, Q27		2SB1566
	Q21, Q24, Q4		2SC1740S
⚠	Q3		2SD1762
⚠	Q26, Q28		2SD2395
	Q32		DTC114TS
	Q30		DTC124ES
⚠	D23, D26		10ELS2
⚠	D3~D6		11ES2
⚠	D2, D24, D25		1SR35-100AYL
	D21, D22		1SS254
⚠	D1		S4YB20F
COILS			
⚠	L2		VTL-004
⚠	L1		VTL1043
CAPACITORS			
	C31		CEAS100M16
	C36		CEAS101M10
	C29		CEAS101M50
	C26		CEAS2R2M50
	C4 ~C6		CEAS470M10
	C18		CEAS470M16
	C13		CEAS471M16
	C10		CEAS471M25
	C25		CEJA2R2M50
	C3		CEJA470M10
	C14, C23, C24		CGCYX473M25
	C11, C12		CKPUYF103Z25
	C7~C9		CKPUYF223Z25
	C27, C28		CQMA223J50
	C21, C22		CQMA272J50
⚠	C52	(0.01/AC400V)	VCG-048
⚠	C1, C2	(6800/16V)	VCH1053

Mark	No.	Description	Part No.
RESISTORS			
⚠	R27~R30 (47Ω, 1/6W)		DCN1003
⚠	R32		RD1/2VM1R5J
⚠	R23~R26		RD1/2VM221J
⚠	R36		RS1/2LMFR47J
	Other Resistors		RD1/6PM□□□J
OTHERS			
	5P CABLE HOLDER		51048-0500
	10P CABLE HOLDER		51048-1000
	CN11 KR CONNECTOR 2P		B2B-PH-K
	CN13 KR CONNECTOR 3P		B3B-PH-K
	J13 5P JUMPER WIRE		D20PDY0525G
	PROTECTION SHEET		DEC1852
	J14 PARALLEL CORD		DXFW0320E
	CAPACITOR COVER		REC-150
	J12 PARALLEL CORD (10P)		VDA1410
⚠	J2 LEAD WIRE UNIT		VDA1443
⚠	J4 LEAD WIRE UNIT		VDA1446
⚠	J3 LEAD WIRE UNIT		VDA1447
	PCB BINDER		VEF1040
	TERMINAL FOR POWER SUPPLY		VKC-019
⚠	H1~H6 FUSE HOLDER		VKR1001
	COIL COVER		VNE1857
	EARTH METAL		VNF-091
	J1 EARTH LEAD UNIT		XDF-511
VSBA ASSY			
SWITCH			
⚠	S1 VOLTAGE SELECTOR		DSB1011
MOTHER ASSY			
SEMICONDUCTORS			
	IC805		BA10393F
	IC203, IC602, IC804		BA15218N
	IC205		BU4053B
	IC351		CA0002AM
	IC801		CXA1081S
	IC802		CXA1372S
	IC403		CXL1009P
	IC807		LA6510L
	IC405		M50552-249SP
	IC803		NJM072L
	IC404		PA0017-P
	IC401		PA5013A
	IC101		PQ213A
	IC201		PS2336A
	IC402		PM0001
	IC801		PM3002
	IC204		TA7320P
	IC806		TA8464K
	IC206		TC4W53F
	IC202		TC7SU04F

Mark	No.	Description	Part No.
	Q204, Q254, Q263, Q405, Q407		2SA1037K
	Q411, Q456, Q496, Q502, Q503		2SA1037K
	Q511, Q540, Q611, Q613, Q614		2SA1037K
	Q703, Q704, Q802, Q812, Q831		2SA1037K
	Q905, Q909, Q917		2SA1037K
	Q809		2SA1399
	Q401		2SB1237X
	Q261, Q351, Q431, Q524		2SC1740S
	Q202, Q203, Q205, Q252, Q253		2SC2412K
	Q255-Q260, Q262, Q352, Q404		2SC2412K
	Q408, Q497-Q501, Q548, Q549		2SC2412K
	Q601-Q605, Q700-Q702, Q801		2SC2412K
	Q803-Q805, Q807, Q811, Q813		2SC2412K
	Q915, Q918		2SC2412K
	Q402		2SD1858X
	Q265, Q266		2SD2144S
	Q808		2SK184
	Q201, Q251, Q267, Q403, Q405		DTA124EK
	Q504, Q512, Q606, Q808, Q810		DTA124EK
	Q814, Q903, Q913		DTA124EK
	Q550		DTC114EK
	Q505, Q522, Q612, Q615, Q624		DTC124EK
	Q901, Q902, Q911, Q912, Q914		DTC124EK
	D805		1SR35-100AVL
	D103, D401, D501, D801-D803		1SS254
	D806, D807		1SS254
	D601, D810, D811		DA204K
	D201		DAN202K
	D403		DAP202K
	D203		SVC201SPA

COILS AND FILTERS

L801		LAU100J
L203, L204, L251, L252, L255		LAU120J
L412, L413, L442, L443, L521		LAU120J
L414, L415, L430		LAU150J
L497, L802, L804		LAU151J
L205, L346		LAU180J
L345, L348, L803		LAU181J
L201, L202		LAU1R2J
L347, L351, L496, L530, L601		LAU220J
L600		LAU270J
L525		LAU330J
L523		LAU390J
L432		LAU430J
L433		LAU470J
L805		LAU4R7J
L522		LAU560J
L411, L431		LAU680J
L458		LFA221J
L457, L524		LFA561J
F204		VTF1011
F203		VTF1034
F201		VTF1051
F202		VTF1064
L208-L210		VTH1013
L206, L207		VTH1024

Mark	No.	Description	Part No.
CAPACITORS			
	C203, C235, C431, C438, C441		CCSQCH050C50
	C816, C844		CCSQCH050C50
	C207, C500, C532, C774		CCSQCH100D50
	C212, C256, C285, C419, C461		CCSQCH101J50
	C496, C632, C809, C811		CCSQCH101J50
	C582		CCSQCH102J50
	C430		CCSQCH120J50
	C345, C456		CCSQCH121J50
	C352, C439, C440		CCSQCH150J50
	C264, C348, C509, C550, C570		CCSQCH151J50
	C771, C772		CCSQCH151J50
	C409, C415, C417, C423, C424		CCSQCH180J50
	C485, C529, C612, C633		CCSQCH180J50
	C437		CCSQCH220J50
	C265, C374, C560		CCSQCH221J50
	C204, C208, C231, C341, C416		CCSQCH270J50
	C495, C510, C520, C775, C779		CCSQCH270J50
	C810, C843		CCSQCH270J50
	C402, C463, C507, C508, C918		CCSQCH271J50
	C930, C957		CCSQCH271J50
	C104, C105, C205, C462, C560		CCSQCH330J50
	C211, C343, C433, C524, C528		CCSQCH390J50
	C559		CCSQCH390J50
	C252, C406		CCSQCH391J50
	C455, C845, C846		CCSQCH470J50
	C841, C999		CCSQCH471J50
	C847		CCSQCH510J50
	C342, C549, C778		CCSQCH560J50
	C206, C344, C346, C808, C812		CCSQCH680J50
	C293, C347, C349, C411, C412		CCSQCH820J50
	C498, C609, C806		CCSQCH820J50
	C536		CCSQCH910J50
	C530, C848		CEANP100M16
	C284, C551, C613, C620, C623		CEANP220M10
	C277, C278, C283		CEANP470M10
	C537, C945		CEAS010M50
	C354, C522		CEAS100M50
	C364, C434, C445, C452, C457		CEAS101M10
	C489, C490, C643, C647, C842		CEAS101M10
	C580		CEAS221M10
	C472, C473, C477		CEAS3R3M50
	C101, C201, C209, C213		CEAS470M16
	C220-C222, C227, C254, C258		CEAS470M16
	C260, C262, C268, C270		CEAS470M16
	C280-C282, C286, C288, C290		CEAS470M16
	C363, C369, C428, C474, C484		CEAS470M16
	C499, C501, C502, C512, C521		CEAS470M16
	C525, C533, C552, C558, C622		CEAS470M16
	C624, C801, C802, C901, C902		CEAS470M16
	C443		CEAS4R7M50
	C387, C831, C941, C942		CEHAQ100M50
	C273, C275		CEJA470M6R3
	C401, C405, C619		CEJANP2R2M35
	C625, C628, C926, C932		CEJANP4R7M16
	C223		CEJANPR47M50

Mark	No.	Description	Part No.
	C368, C849		CEJAR47M50
	C446		CFTXA103J50
	C365, C366, C514		CFTXA104J50
	C224		CFTXA223J50
	C359, C360, C471, C603		CFTXA224J50
	C614, C626		CFTXA332J50
	C361, C362		CFTXA393J50
	C610, C617		CFTXA563J50
	C515, C517		CFTXA683J50
	C832, C940, C944		CKSQYB102K50
	C913, C925, C929, C936		CKSQYB333K25
	C920, C923		CKSQYB562K50
	C103, C106, C108, C109		CKSQYF103Z50
	C130-C133, C202, C210		CKSQYF103Z50
	C214-C217, C225, C226, C230		CKSQYF103Z50
	C232, C233, C251, C253, C255		CKSQYF103Z50
	C257, C259, C281, C283, C289		CKSQYF103Z50
	C271, C274, C276, C285, C289		CKSQYF103Z50
	C291, C350, C351, C414, C418		CKSQYF103Z50
	C421, C422, C425, C426		CKSQYF103Z50
	C458-C460, C475, C476, C486		CKSQYF103Z50
	C535, C553, C554, C557		CKSQYF103Z50
	C561, C562, C565, C566, C602		CKSQYF103Z50
	C604, C615, C616, C621, C644		CKSQYF103Z50
	C651, C776, C777, C780, C781		CKSQYF103Z50
	C783, C803-C805, C807, C814		CKSQYF103Z50
	C817, C818, C850, C855-C857		CKSQYF103Z50
	C904, C914, C915, C917, C928		CKSQYF103Z50
	C931, C933, C934, C937-C939		CKSQYF103Z50
	C946, C950		CKSQYF103Z50
	C107, C234, C371-C373		CKSQYF104Z25
	C403, C404, C427, C429, C435		CKSQYF104Z25
	C442, C479-C481, C503-C506		CKSQYF104Z25
	C511, C513, C526, C531, C821		CKSQYF104Z25
	C911, C912, C916, C919, C922		CKSQYF104Z25
	C924, C927, C947, C952, C959		CKSQYF104Z25
	C581		CKSQYF223Z50
	C102, C407, C408, C486, C487		CKSQYF473Z25
	C483, C487, C488, C527, C601		CKSQYF473Z25
	C628, C813, C815, C943		CKSQYF473Z25
	C948, C949, C951, C956		CKSQYF473Z25
	C858		CKSYF105Z16
	C219, C605-C607		CQMA102J50
	C518		CQMA103J50
	C608		CQMA152J50
	C627		CQMA222J50
	C444, C611		CQMA272J50
	C218, C355-C358		CQMA472J50
	VC201 (10P)		PCM1001
	C958 (47μ/16V)		VCH1115
	VC202 (20P)		VCM-008
	VC203 (30P)		VCM1005
RESISTORS			
	R496		RD1/6PM101J
	R564		RD1/6PM102J
	R687		RD1/6PM103J
	R287, R605, R817		RD1/6PM221J
	R406		RD1/6PM224J

Mark	No.	Description	Part No.
	R619, R631, R854		RD1/6PM225J
	R286		RD1/6PM282J
	R255, R261, R289, R845, R846		RD1/6PM470J
	R431		RD1/6PM510J
	R290, R358		RD1/6PM680J
	R438		RN1/6PQ1503F
	R511		RN1/6PQ2002F
	R415, R416		RN1/6PQ3002F
	R434		RN1/6PQ5101F
	VR608		VRTB6VS153
	VR201 , VR601		VRTB6VS222
	VR441		VRTB6VS223
	VR505 , VR606		VRTB6VS333
	VR202		VRTB6VS471
	VR204, VR481, VR482, VR521		VRTB6VS472
	VR603, VR604, VR607		VRTB6VS473
	Other Resistors		RS1/10S□□□J
OTHERS			
	6P CABLE HOLDER		51048-0600
	7P CABLE HOLDER		51048-0700
	8P CABLE HOLDER		51048-0800
	9P CABLE HOLDER		51048-0900
	13P CABLE HOLDER		51048-1300
	CN120 11P TOP POST		B11P-SHF-1AA
	J4 6P JUMPER WIRE		D20PDY0610G
	J5 7P JUMPER WIRE		D20PDY0720G
	J1 8P JUMPER WIRE		D20PDY0840G
	J3 13P JUMPER WIRE		D20PDY1325G
	CN303 FFC CONNECTOR 23P		HLEM23S-1
	CN305 6P JUMPER CONNECTOR		SHRK06S-4
	PCB BINDER		VEF1040
	JA1 1P PINJACK		VKB1063
	64P SHRINK IC SOCKET		VKH1004
	SCREW TERMINAL		VNE1841
	EARTH METAL		VNF-091
	X202 CRYSTAL RESONATOR (14.318MHz)		VSS1029
	X101 CERAMIC RESONATOR (9.00MHz)		VSS1040
	X203 CRYSTAL RESONATOR (17.734MHz)		VSS1059
	X201 CRYATAL RESONATOR (14.22MHz)		VSS1060
	SCREW		BBZ30P060FMC

FG ASSY

SEMICONDUCTOR			
	D1		GP1S51V
OTHERS			
	HOUSING ASSY		VKP1950

PKSB ASSY

SWITCHES			
	S4, S5		DSG1015
OTHERS			
	HOUSING ASSY		VKP1951

Mark	No.	Description	Part No.
CAMB ASSY			
SEMICONDUCTOR			
	Q10		2SC1740S
RESISTORS			
	R10		RD1/4VM182J
	R11		RD1/4VM470J
OTHERS			
	CN404	KR CONNECTOR 3P	B3B-PH-K
	CN402	KR CONNECTOR 3P	B3B-PH-K-R
	CN403	FFC CONNECTOR 23P	HLEM23R-1
	CN401	23P FFC CONNECTOR(TOP)	SLEM23S-2
	HOUSING ASSY		VKP1949
LOSB ASSY			
SWITCHES			
	S1-S3		DSG1015
LOMB ASSY			
CAPACITOR			
	C1		CGCYX473M2S
OTHERS			
	J51	4P PARALLEL WIRE	D2GPWW0415G
	J55	6P PARALLEL WIRE	D2GPWY0615G

PIONEER
The Art of Entertainment

Service Manual

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CD CDV LD PLAYER

CLD-V250

CHAPTER 2

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CHAPTER 2
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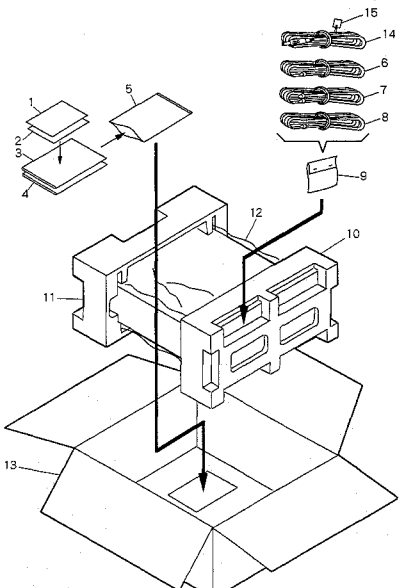
T-IFI OCT. 1994 Printed in Japan

1. PACKING AND EXPLODED VIEWS

1.1 PACKING



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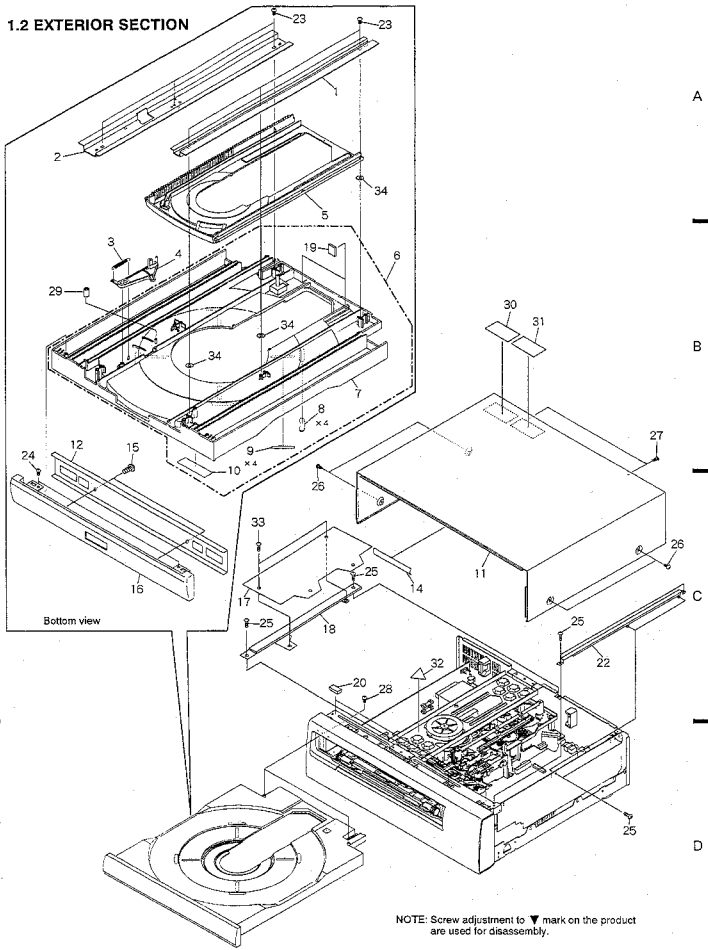
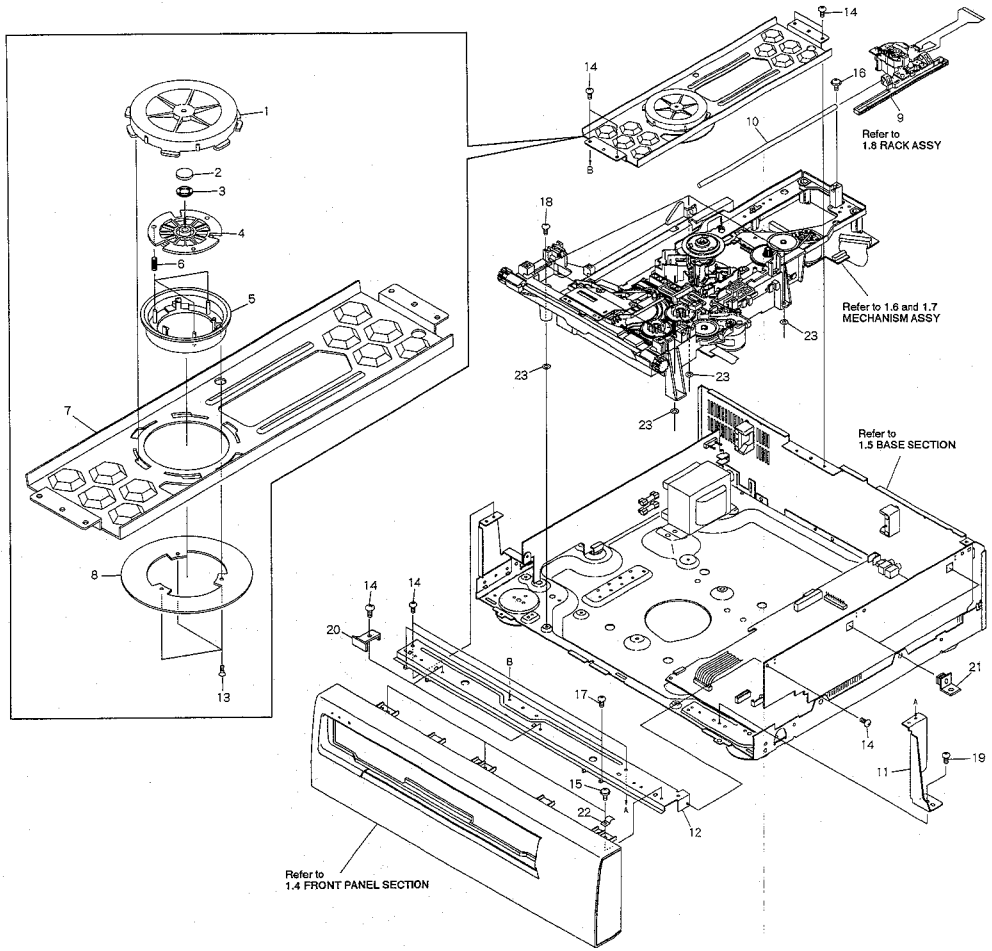
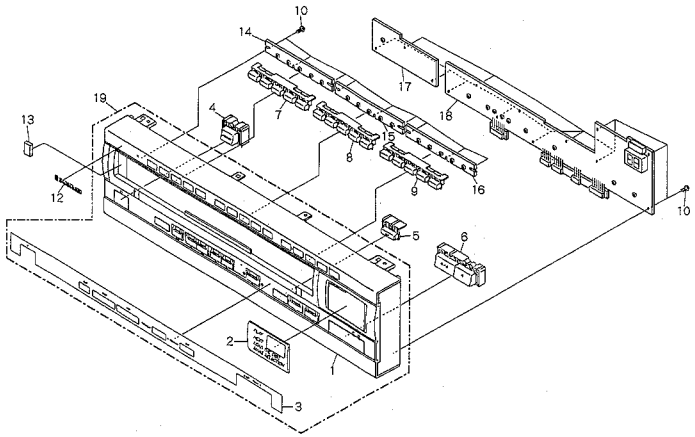


NOTE: Screw adjustment to ▼ mark on the product are used for disassembly.

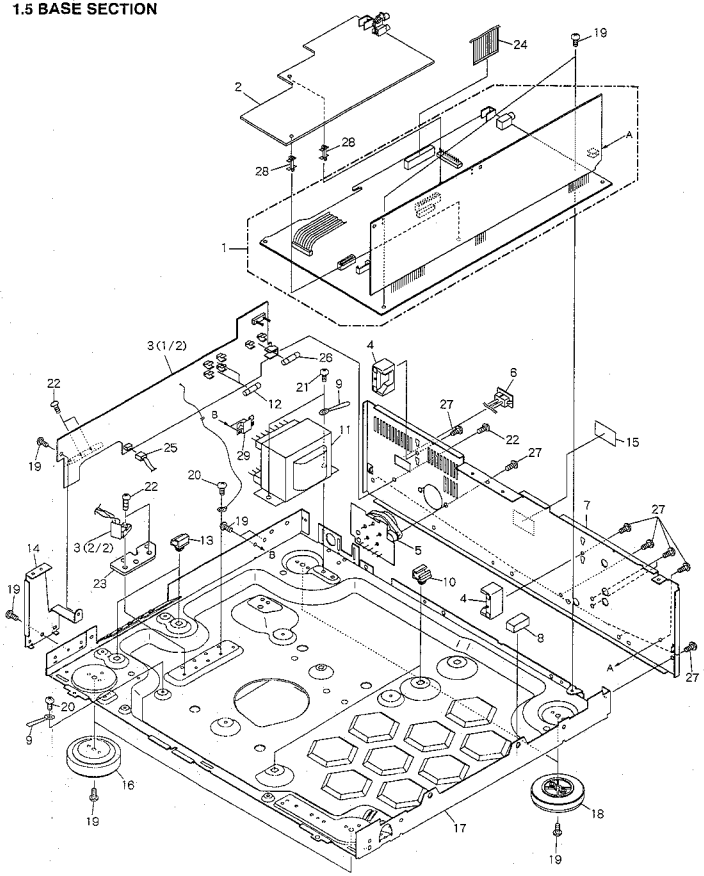
1.3 TOP VIEW SECTION



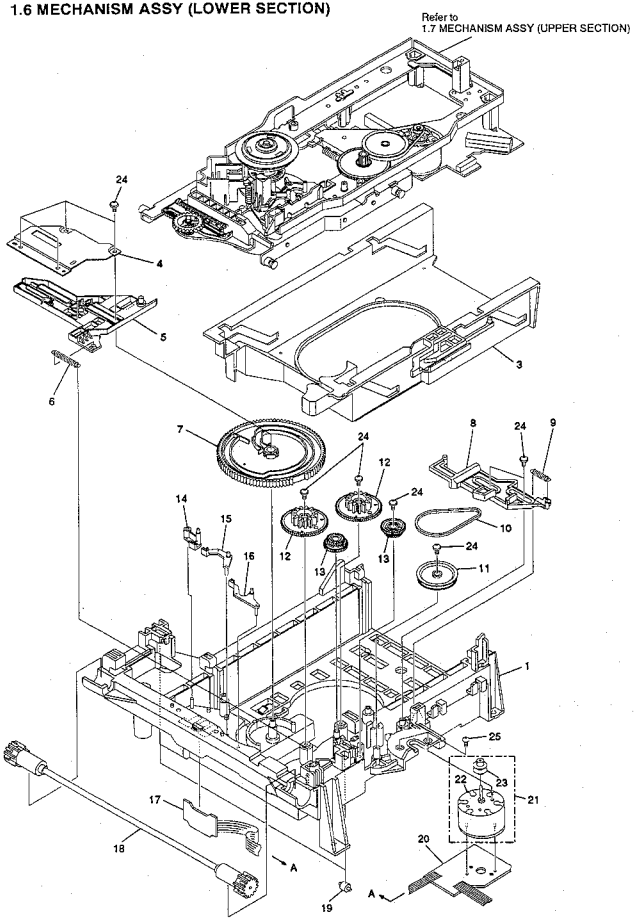
1.4 FRONT PANEL SECTION



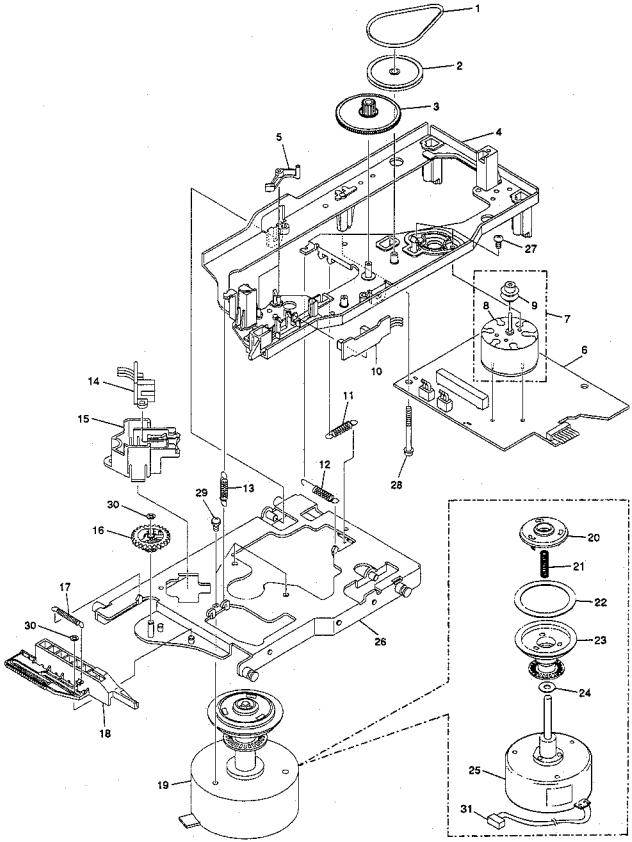
1.5 BASE SECTION



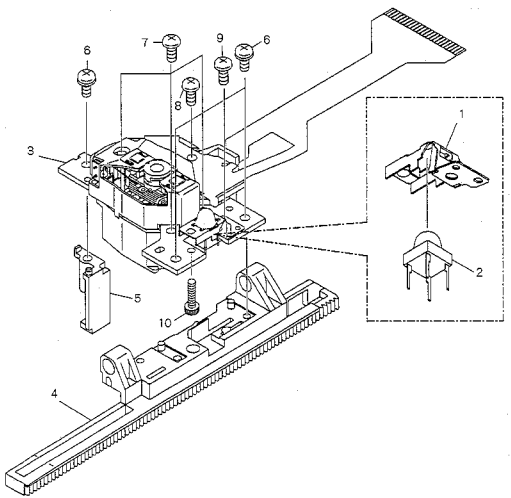
1.6 MECHANISM ASSY (LOWER SECTION)



1.7 MECHANISM ASSY (UPPER SECTION)



1.8 RACK ASSY



2. SCHEMATIC AND PCB CONNECTION DIAGRAMS

NOTE FOR SCHEMATIC DIAGRAMS

(Type 4A)

1. When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".

2. Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.

3. RESISTORS:
Unit: kkΩ, MMΩ, or Ω unless otherwise noted.
Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
Tolerance:(F)±1%, (G)±2%, (K)±10%, (M)±20% or ±5% unless otherwise noted.

4. CAPACITORS:
Unit : ppF or μF unless otherwise noted.
Ratings : capacitor (μF) /voltage (V) unless otherwise noted.
Rated voltage : 50V except for electrolytic capacitors.

5. COILS:
Unit : mmH or μH unless otherwise noted.

6. VOLTAGE AND CURRENT:
⊏ or ⊏ V :
DC voltage (V) in PLAY mode unless otherwise noted.
⊏ mA or ⊏ mA :
DC current in PLAY mode unless otherwise noted.
Value in ( ) is DC current in STOP mode.

7. OTHERS:
- ⊘ or ⊘ : Adjusting point.
- ⊲ : Measurement point.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.

8. SCH – □ ON THE SCHEMATIC DIAGRAM:
- SCH- □ indicates the drawing number of the schematic diagram. (SCH stands for schematic diagram.)

9. SWITCHES (Underline indicates switch position):

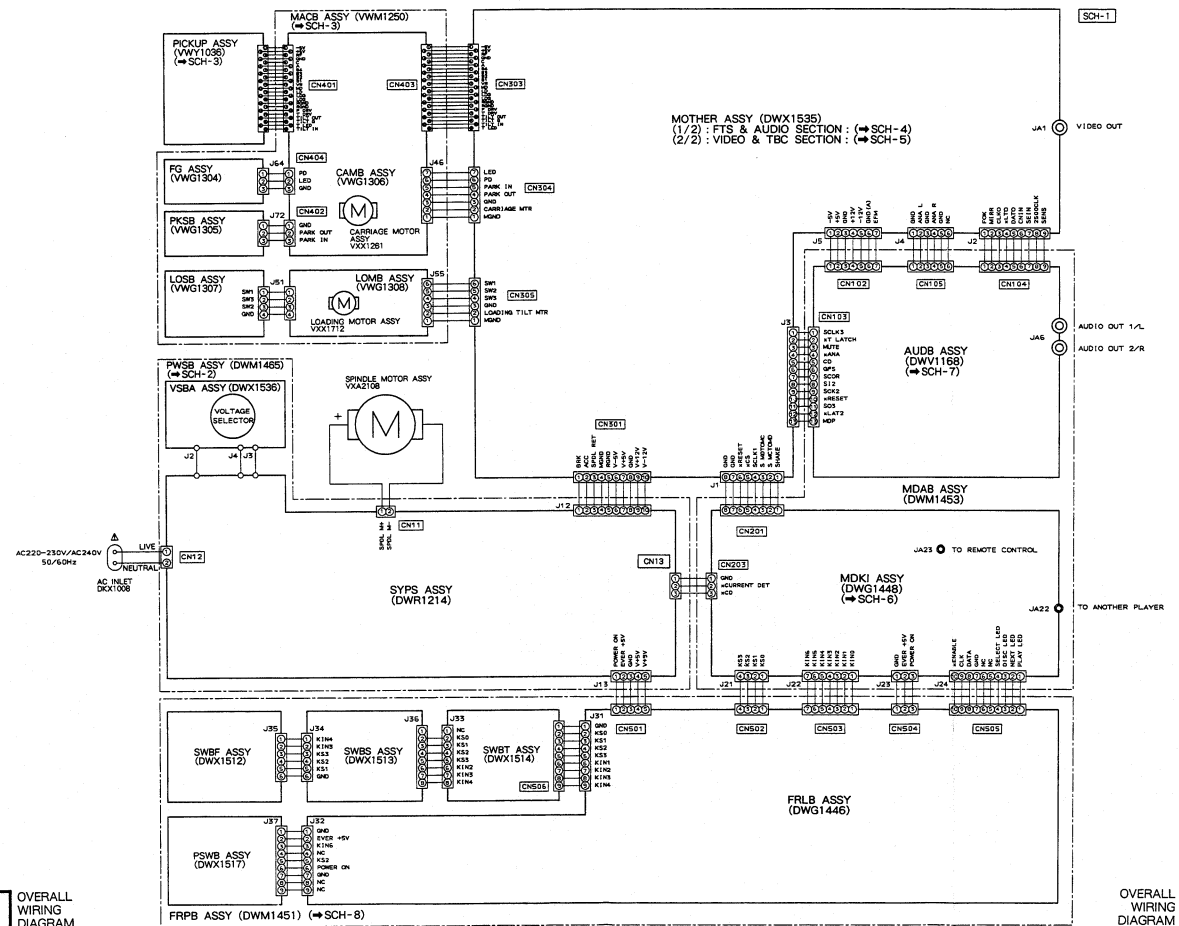
VSBA ASSY
S1 : VOLTAGE SELECTOR
AC220V - 230V/240V
LOSB ASSY
S1 : TILT LOADING 1
S2 : TILT LOADING 2
S3 : TILT LOADING 3
PKSB ASSY
S4 : PARK OUT
S5 : PARK IN
SWBF ASSY
S1001 : 1
S1002 : 2
S1003 : 3
S1004 : 4
S1005 : 5
SWBS ASSY
S1006 : 6
S1007 : 7
S1008 : 8
S1009 : 9
S1010 : 10
SWBT ASSY
S1011 : 11
S1012 : 12
S1013 : 13
S1014 : 14
S1015 : 15
PSWB ASSY
S1017 : POWER
FRLB ASSY
S1018 : II (PAUSE)
S1019 : MPX
S1020 : MODE
S1021 : ◀◀ (SCAN)
S1022 : ■ / ▲ (STOP/OPEN/CLOSE)
S1023 : ▶▶I (SKIP)
S1024 : ▶ (PLAY)
S1026 : I◀◀ (SKIP)
S1028 : ▶▶ (SCAN)

NOTE FOR PCB DIAGRAMS:

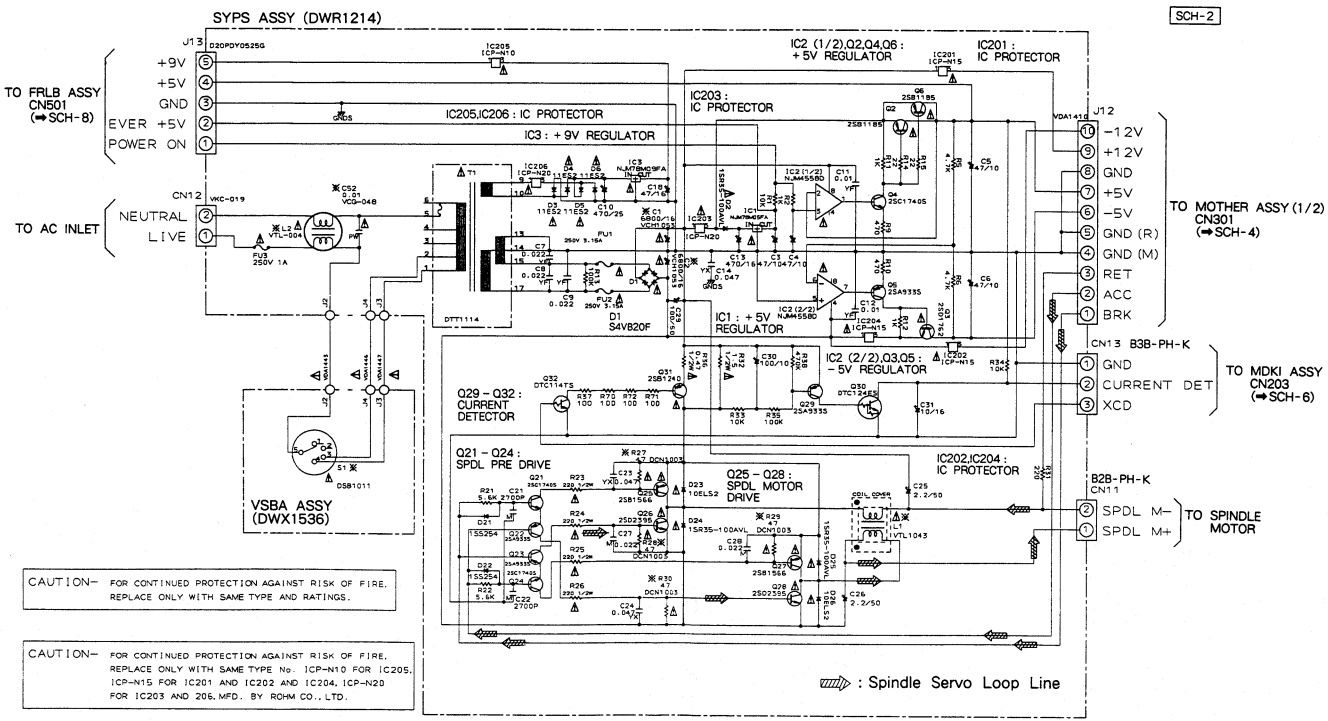
1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

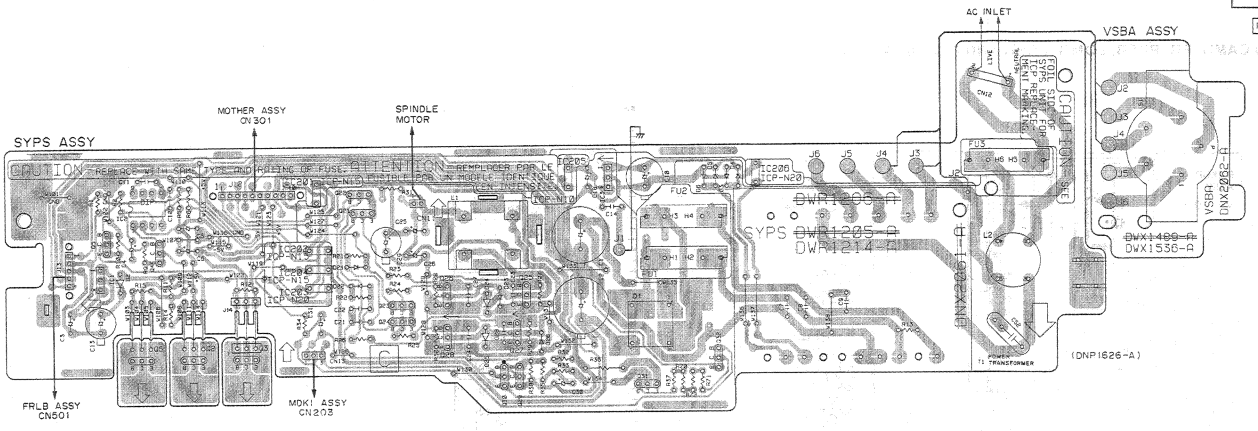
Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

2.1 OVERALL WIRING DIAGRAM

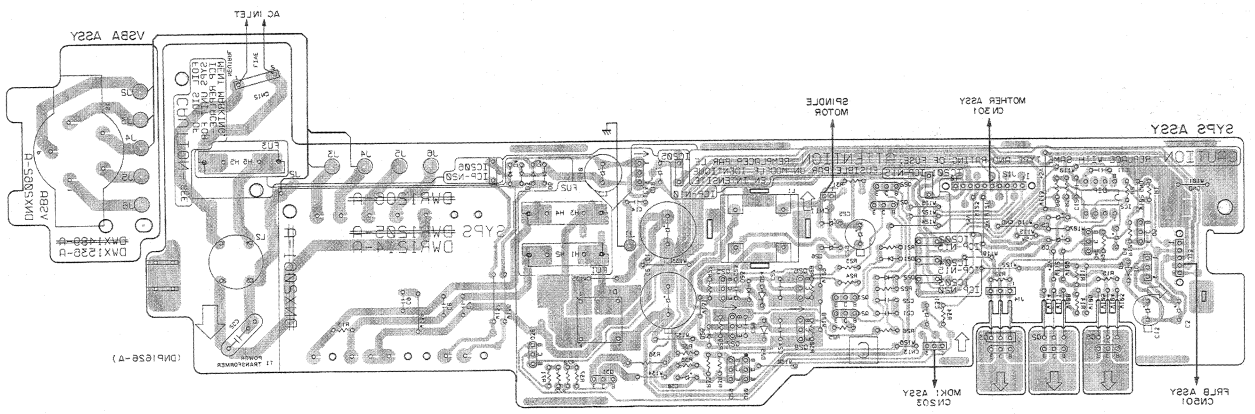


2.2 SYPS AND VSBA ASSEMBLIES



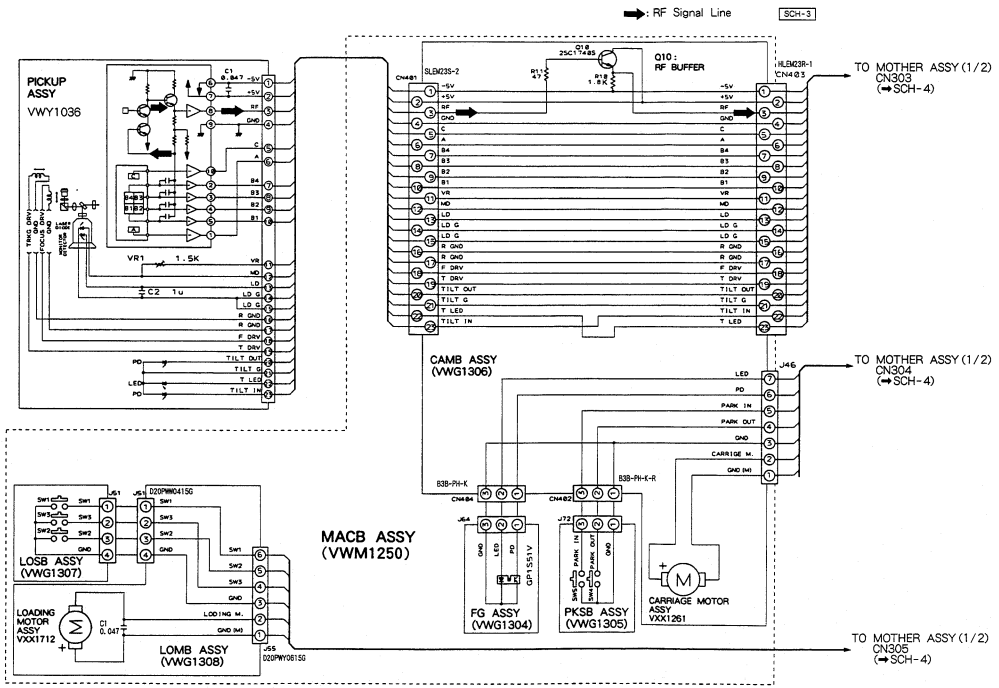


● This diagram is viewed from the mounted parts side.

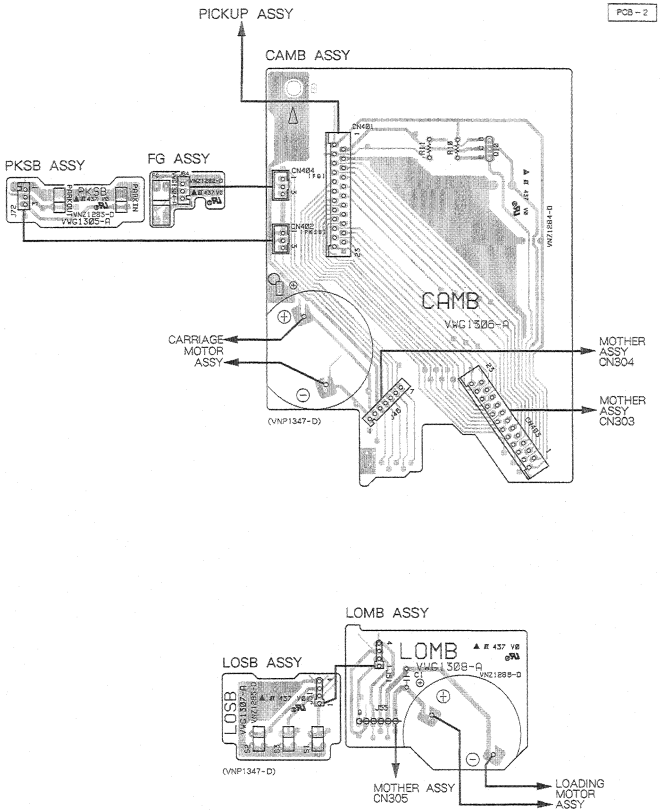


● This diagram is viewed from the foil side.

2.3 CAMB, FG, PKSB, LOMB, LOSB AND PICKUP ASSEMBLIES



CAMB ASSY,FG ASSY, PKSB ASSY,LOMB ASSY, LOSB ASSY, PICKUP ASSY
SCH-3



● This diagram is viewed from the mounted parts side.

● This diagram is viewed from the foil side.

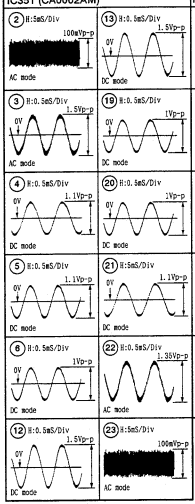
WAVEFORMS AND VOLTAGES

FTS AND AUDIO SECTION

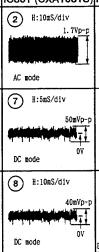
Note : (No) in the table correspond to the pin number.

Values indicate the waveforms in the play mode.

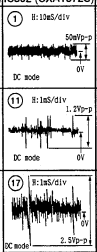
IC351 (CA0002AM)



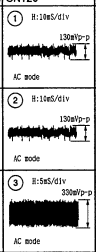
IC801 (CXA1081S)



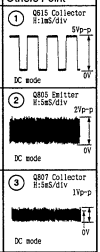
IC802 (CXA1372S)



CN120



Others Point



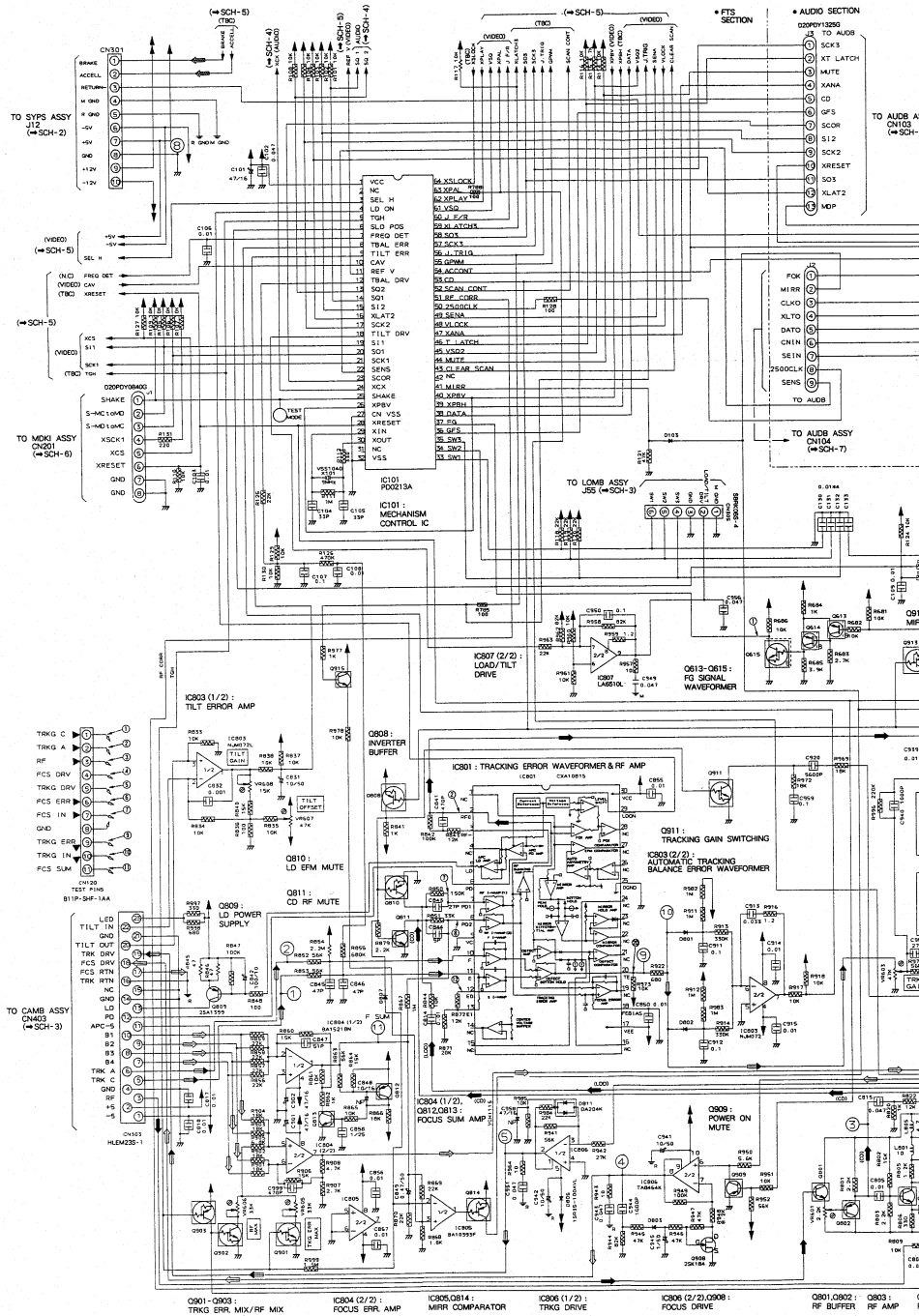
Note : Values indicate the voltage in the play mode.

IC351 (CA0002AM)

Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	− 5	7	0	13	*	19	*
2	*	8	0	14	− 0.6	20	*
3	*	9	0	15	− 0.6	21	*
4	*	10	5	16	0	22	*
5	*	11	2	17	0	23	*
6	*	12	*	18	5	24	− 2.2

* : Refer to waveforms.

2.4 MOTHER ASSY(1/2)



SCH-4 MOTHER ASSY (1/2)

MOTHER ASSY (1/2)
(DWX1535)

SCH-4

2SA1037K : Q611, Q613, Q614, Q802, Q812, Q831, Q905, Q909, Q917
2SC2412K : Q352, Q801, Q803 ~ Q805, Q807, Q811, Q813, Q815, Q918
DTA124EK : Q806, Q810, Q814, Q903, Q913
DTC124EK : Q615, Q901, Q902, Q911, Q912, Q914
1SS254 : D103, D601 ~ D603, D606, D807

: RF Signal Route
(CD) : RF Signal Route (CD)
(LDD) : RF Signal Route (LDD)
: Tracking Servo Loop Line
: Focus Servo Loop Line
: Spindle Servo Loop Line
: Audio Signal Route (L ch)

TO AUD8 ASSY CN103 (➡SCH-7)

TO CAMB ASSY J46 (➡SCH-3)

IC602 (1/2) BA15218N

IC602 (1/2) : REFERENCE VOLTAGE BUFFER

(➡SCH-5) V REF (TBC)

(➡SCH-5) CD (TBC) CD (VIDEO)

(➡SCH-5) SAMPS (TBC)

D20PDY0720G
-5V
+5V
GND
+12V
-12V
GND
EFM
TO AUD8 ASSY CN102 (➡SCH-7)

D20PDY0810G
GND
LCH
GND
RCH
NC
NC
TO AUD8 ASSY CN105 (➡SCH-7)

Q905 : BUFFER

Q912,Q913 : MIRR KILLING SW

TTL → I²L

IC802 CXA1372S

IC351 : FM AUDIO DECODER

IC351 CA3002AM

Q831 : NTSC/PAL SWITCHING

Q914 : CHARACTERISTIC SWITCHING for ONE TRACK JUMP

Q917,Q918 : SLIDER DRIVE SIGNAL LIMITER

Q351,Q352 : RF AMP

IC807 LA6510L

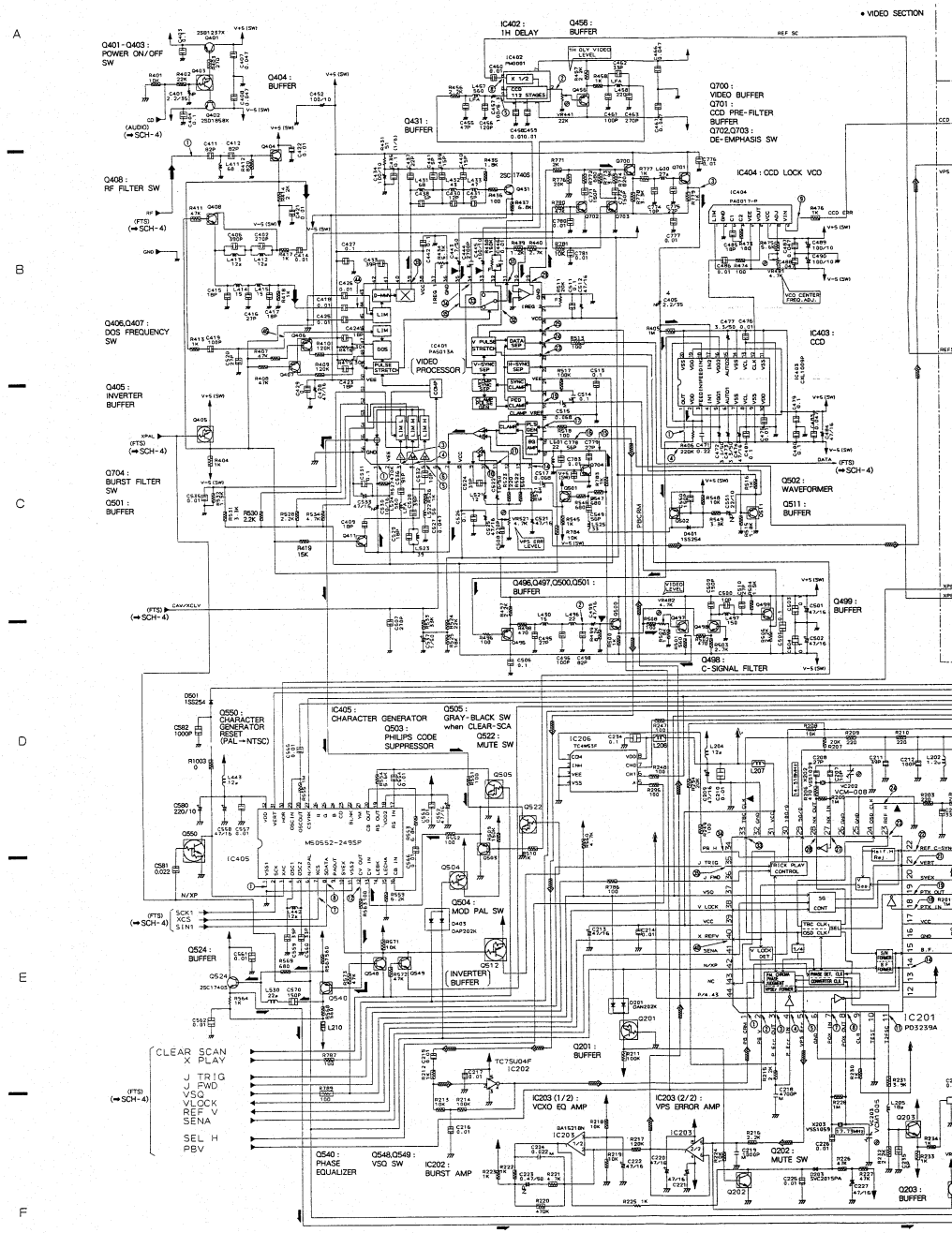
RF (VIDEO) (➡SCH-5)

Q803 : RF AMP
Q804 : RF CORECTION
Q805 : RF BUFFER
Q807 : EFM BUFFER
IC807 (1/2) : SPDL DRIVE

MOTHER ASSY (1/2)

SCH-4

2.5 MOTHER ASSY(2/2)



SECTION

MOTHER ASSY (2/2)
(DWX1535)

2SA1037K : Q204,Q254,Q263,Q406,Q407,Q411,Q456, Q496,Q502,Q503,Q511,Q540,Q703,Q704
2SC2412K : Q202,Q203,Q205,Q252,Q253,Q255 ~ Q260, Q262,Q404,Q408,Q497 ~ Q501,Q548,Q549, Q601 ~ Q605,Q700 ~ Q702
DTA124EK : Q201,Q251,Q267,Q403,Q405,Q504,Q512,Q606
DTC114EK : Q550
DTC124EK : Q505,Q522,Q612,Q624

: RF Signal Route
: Video Signal Route
(Y) : Y-Signal Route
: C-Signal Route
: Spindle Servo Loop Line

SCH-5

• TBC SECTION

Q602 : TBC LOOP GAIN SWITCHING
Q603,Q604 : TRAPEZOID WAVEFORMER
Q601,Q605,Q606 : TBC ERROR DET.

CCD ERR
VPS ERR
REFSC
XPBHD
XPBSYNC
SHIFT

IC601 : TBC SERVO & SYNC GEN.
LOGIC BLOCK
PFC
SYNC SIGNAL GEN
REF H GEN
REF SC GEN
PBH TIMING GEN
LOCK DETECTOR
SERIAL PARALEL DECORDER

IC602 (2/2) : CCD ERROR AMP
Q612 : LD/CD SW
Q624 : INVERTER BUFFER

(AUDIO) (→ SCH-4)
(FTS) (→ SCH-4)
BRAKE
ACCELL

(FTS) (→ SCH-4)

Q254 : BURST GAIN CONTROL SW for TRICK PLAY
Q259,Q260 : Y/C MIXING AMP
Q255 : BUFFER
Q256 : C-SIGNAL BUFFER
Q263 : BUFFER
Q261 : 75 Ω DRIVER
Q258 : Y-SIGNAL BUFFER
IC205 : VIDEO SW
IC201 PD3239A
IC204 : C-SIGNAL FREQUENCY CONVERTER
Q252,Q253 : MULTIPLEXER CONTROL SW
Q257 : BUFFER
Q251 : BUFFER
Q262 : MUTE SW
Q203 : BUFFER
VSQ

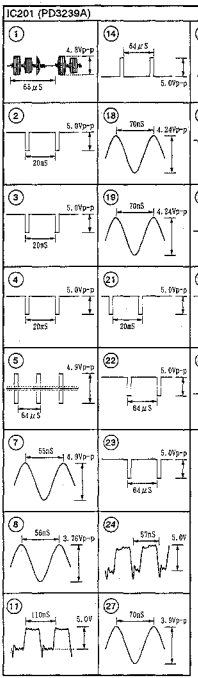
MOTHER ASSY (2/2)

SCH-5

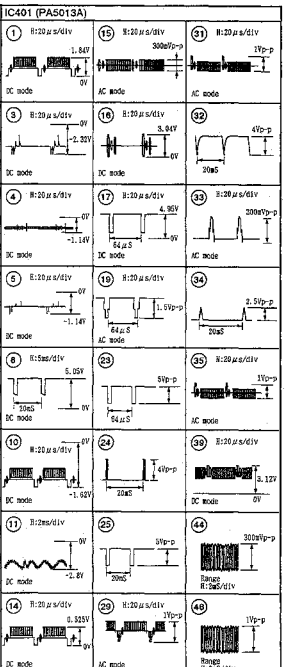
WAVEFORMS AND VOLTAGES
VIDEO AND TBC SECTION

Note : (No.) in the table correspond to the pin number. Values indicate the waveforms in the play mode.

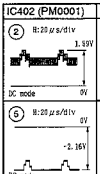
IC201 (PD3239A)



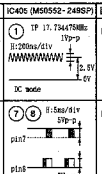
IC401 (PA5013A)



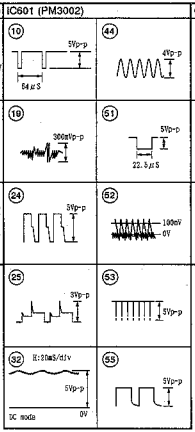
IC402 (PM0001)



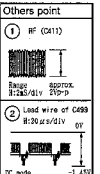
IC405 (M50552-248SP)



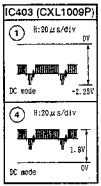
IC601 (PM3002)



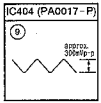
Others point



IC403 (CXL1009P)



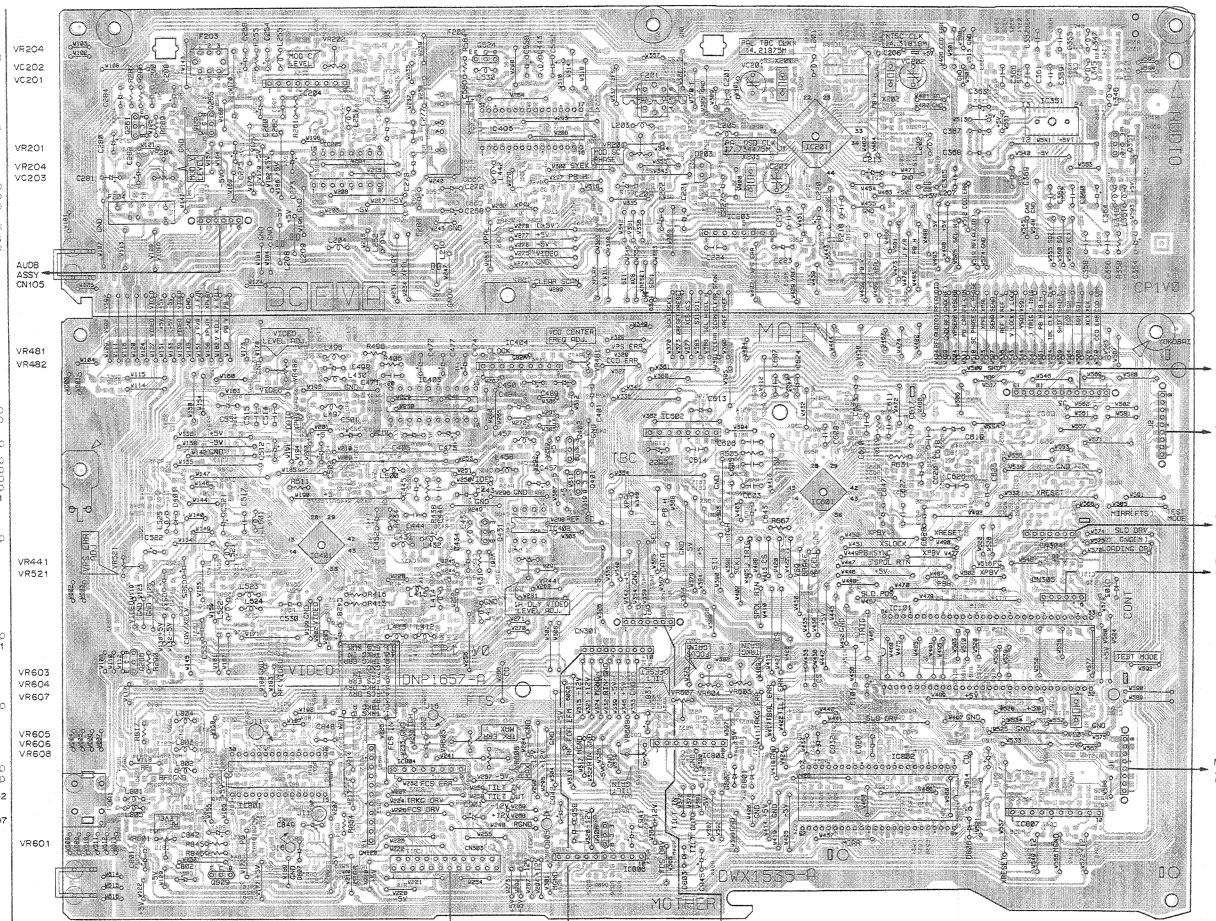
IC404 (PA0017-P)



Note : Values indicate the voltages in the PLAY mode.

IC405 (M50552-248SP)

Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0	9	–	17	0.8	25	–
2	5	10	5	18	–	26	–
3	5	11	0	19	0	27	–
4	2.4	12	1.1	20	0	28	2.3
5	2.4	13	1.1	21	–	29	2.3
6	0	14	–	22	–	30	–
7	5	15	1.8	23	–	31	4.8
8	0.4	16	0.8	24	–	32	–



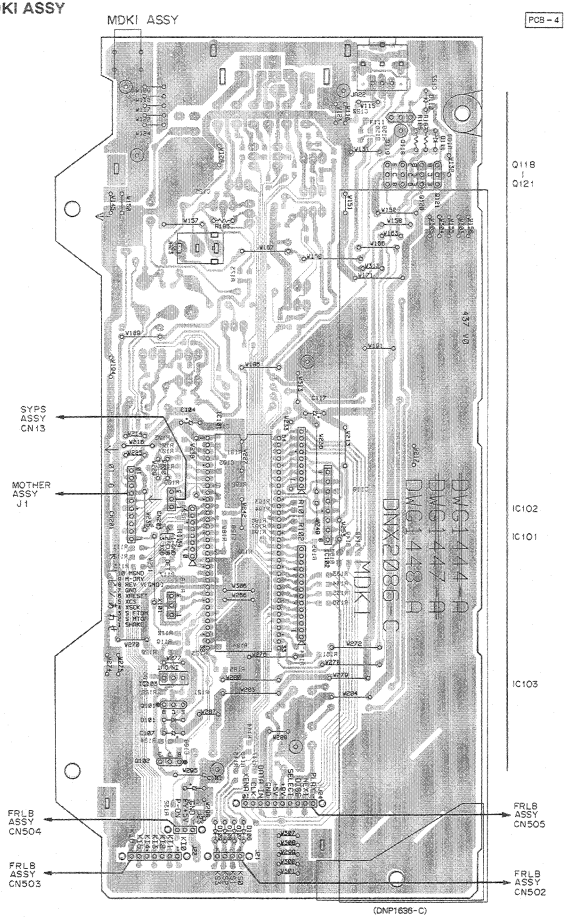
● This diagram is viewed from the mounted parts side.

● This diagram is viewed from the foil side.

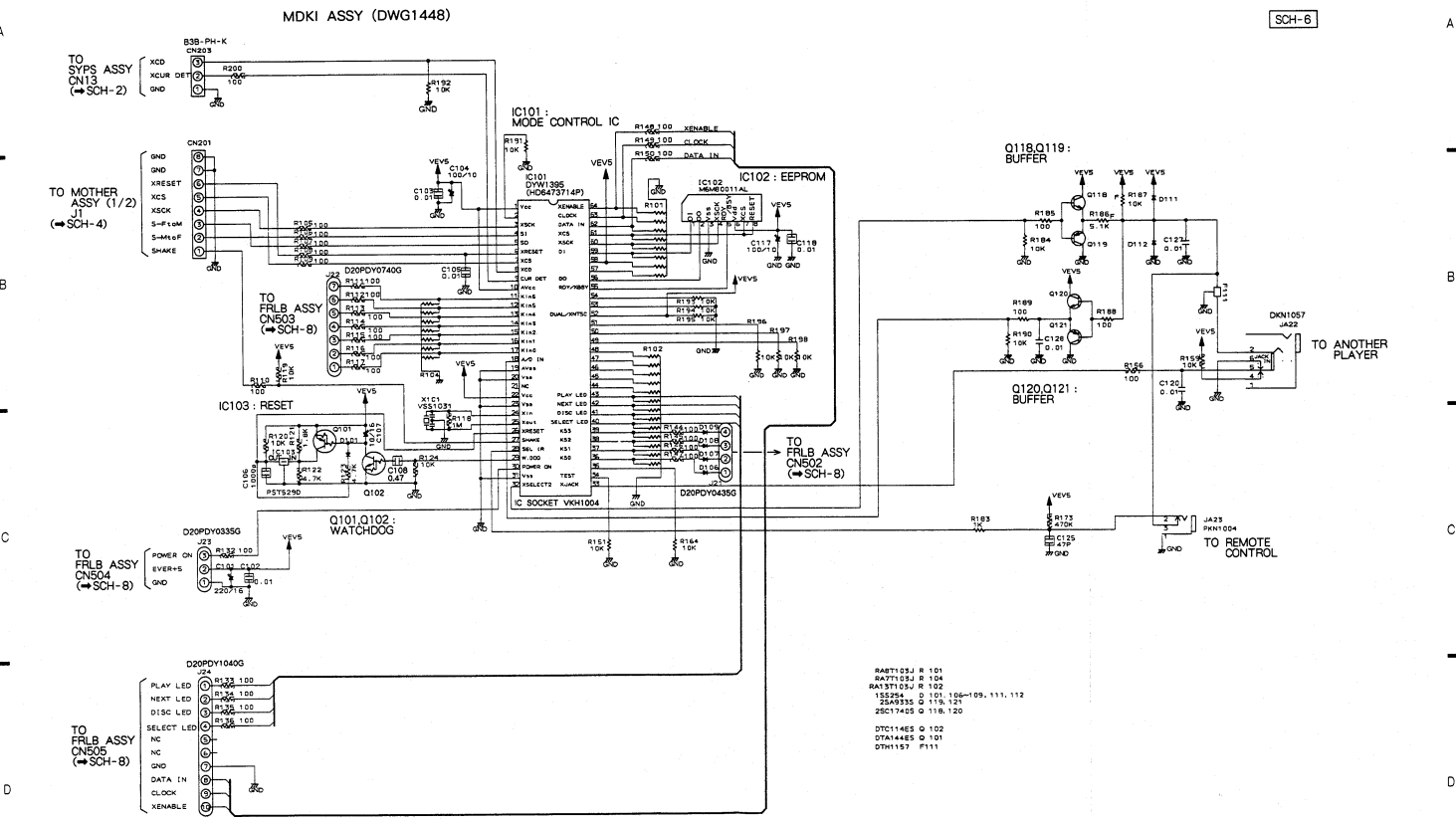
2.6 MDKI ASSY

● This diagram is viewed from the foil side.

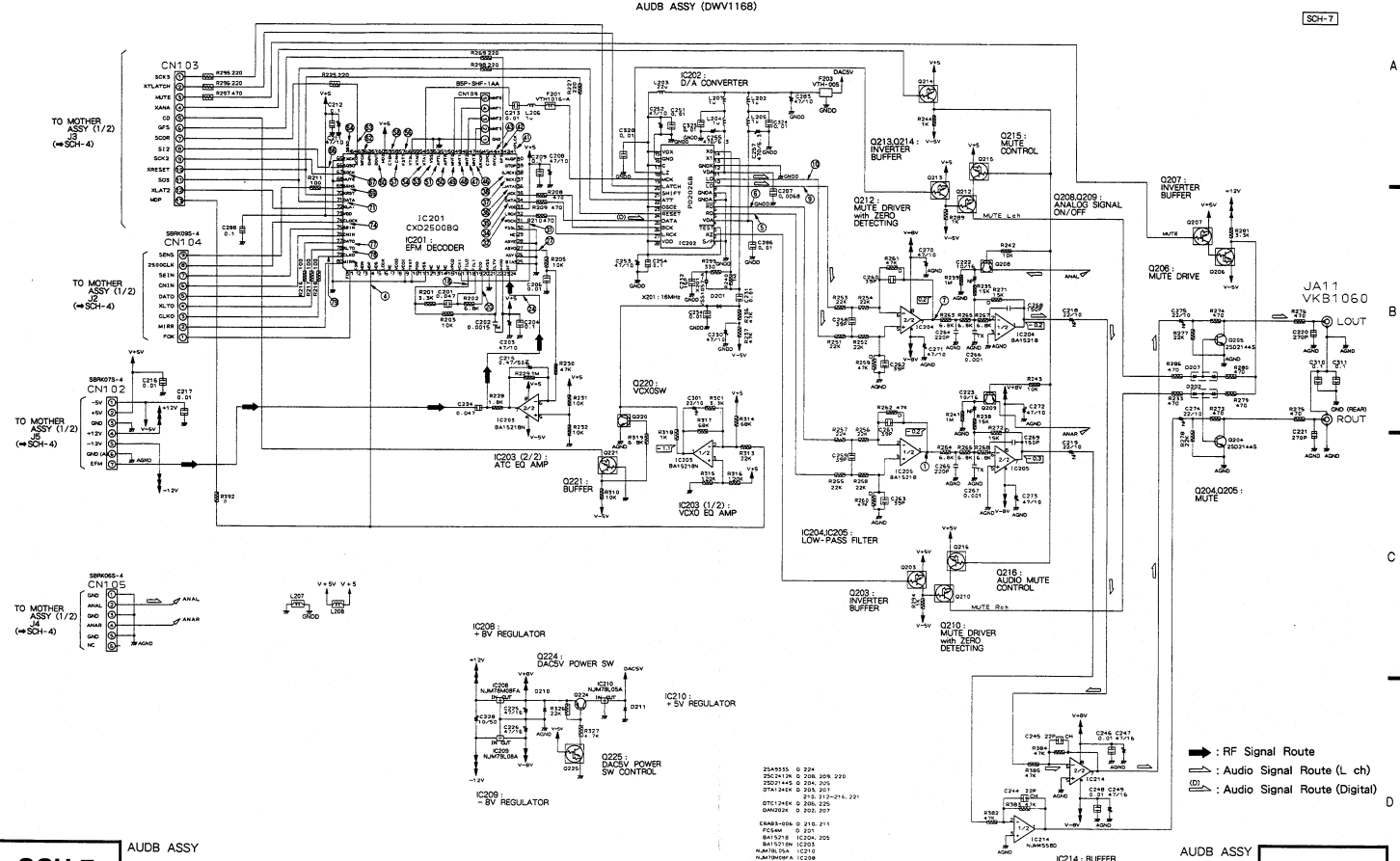
2.6 MDKI ASSY



● This diagram is viewed from the mounted parts side.


MDKI ASSY (DWG1448)
SCH-6
TO SYPS ASSY CN13 (➡SCH-2)
TO MOTHER ASSY (1/2) J1 (➡SCH-4)
TO FRLB ASSY CN503 (➡SCH-8)
TO FRLB ASSY CN504 (➡SCH-8)
TO FRLB ASSY CN505 (➡SCH-8)
TO FRLB ASSY CN502 (➡SCH-8)
IC101 : MODE CONTROL IC
IC101 DYW1395 (HD6473714P)
IC102 : EEPROM
IC102 M5M5011AL
IC103 : RESET
PST529D
Q101,Q102 : WATCHDOG
IC SOCKET VKH1004
Q118,Q119 : BUFFER
Q120,Q121 : BUFFER
TO ANOTHER PLAYER
TO REMOTE CONTROL
D20PDY0740G
D20PDY0335G
D20PDY0435G
D20PDY1040G
DKN1057
JA22
JA23
PKN1004
RA8T103J R 101
RA7T103J R 104
RA3T103J R 102
1SS254 D 101,105~109, 111, 112
2SA933S Q 119, 121
2SC1740S Q 118, 120
DTC114ES Q 102
DTA144ES Q 101
DTH1157 F111
SCH-6
MDKI ASSY
MDKI ASSY
SCH-6

2.7 AUDB ASSY

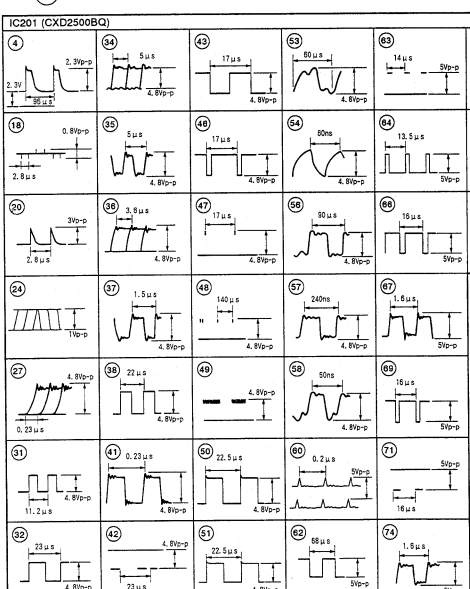

AUDB ASSY (DWV1168)
SCH-7
CN103
CN104
CN102
CN105
TO MOTHER ASSY (1/2) J3 (⇒SCH-4)
TO MOTHER ASSY (1/2) J2 (⇒SCH-4)
TO MOTHER ASSY (1/2) J5 (⇒SCH-4)
TO MOTHER ASSY (1/2) J4 (⇒SCH-4)
IC201 CXD2500BQ EFM DECODER
IC202 D/A CONVERTER
IC203 (2/2) : ATC EQ AMP
IC203 (1/2) : VCXO EQ AMP
IC204,IC205 LOW-PASS FILTER
IC208 : +8V REGULATOR
IC209 : -8V REGULATOR
IC210 : +5V REGULATOR
IC214 : BUFFER
Q212 : MUTE DRIVER with ZERO DETECTING
Q213,Q214 : INVERTER BUFFER
Q215 : MUTE CONTROL
Q216 : AUDIO MUTE CONTROL
Q220 : VCXOSW
Q221 : BUFFER
Q224 : DAC5V POWER SW
Q225 : DAC5V POWER SW CONTROL
Q203 : INVERTER BUFFER
Q210 : MUTE DRIVER with ZERO DETECTING
Q207 : INVERTER BUFFER
Q206 : MUTE DRIVE
Q208,Q209 : ANALOG SIGNAL ON/OFF
Q204,Q205 : MUTE
JA11 VKB1060
LOUT
ROUT
GND (REAR)
X201 : 16MHz
: RF Signal Route
: Audio Signal Route (L ch)
: Audio Signal Route (Digital)
AUDB ASSY
SCH-7

WAVEFORMS AND VOLTAGES
AUDB ASSY

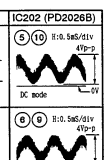
Note : (No.) in the table correspond to the pin number.

Values indicate the waveforms in the play mode.

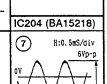
IC201 (CXD2500BQ)



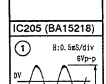
IC202 (PD2026B)



IC204 (BA15218)



IC205 (BA15218)



Note : Values indicate the voltages in the PLAY mode.

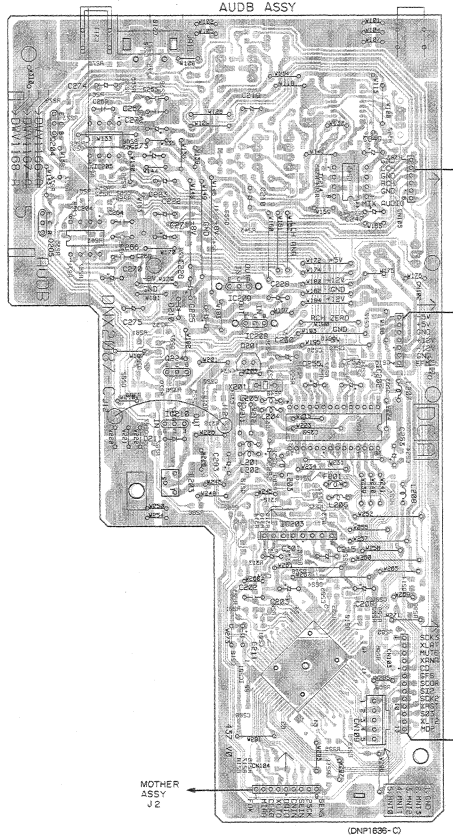
IC201 (CXD2500BQ)

Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0	11	0	21	0	31	*	41	*	51	*	61	5	71	*
2	0	12	0	22	2.3	32	*	42	*	52	0	62	*	72	5
3	0	13	0	23	4.8	33	4.8	43	*	53	*	63	*	73	5
4	*	14	0	24	*	34	*	44	0	54	*	64	*	74	*
5	0	15	0	25	0	35	*	45	4.8	55	0	65	0	75	0
6	4.8	16	4.8	26	0	36	*	46	*	56	*	66	*	76	0
7	0	17	0	27	*	37	*	47	*	57	*	67	*	77	*
8	4.8	18	*	28	0	38	*	48	*	58	*	68	0	78	*
9	0	19	2.4	29	0	39	0	49	*	59	5	69	*	79	*
10	0	20	*	30	0	40	4.8	50	*	60	*	70	5	80	0

* : Refer to waveforms.

PCB - 5

AUDB ASSY



● This diagram is viewed from the mounted parts side.

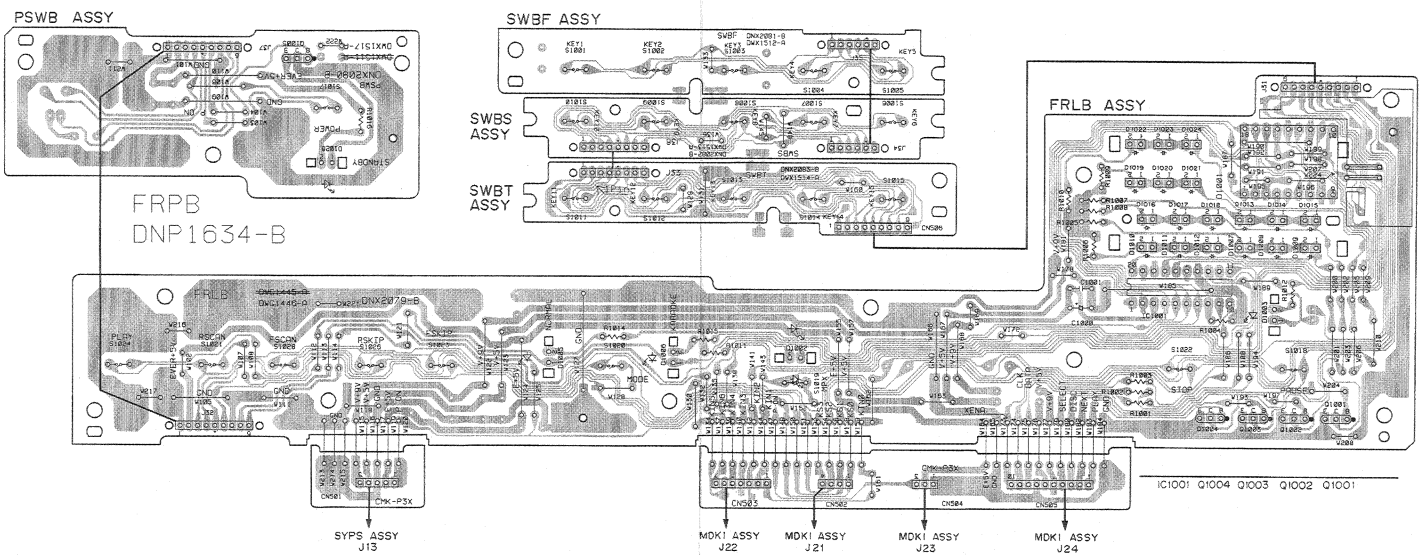
P08 - 5

● This diagram is viewed from the foil side.

2.8 SWBS, SWBF, SWBT, PSWB AND FRLB ASSEMBLIES

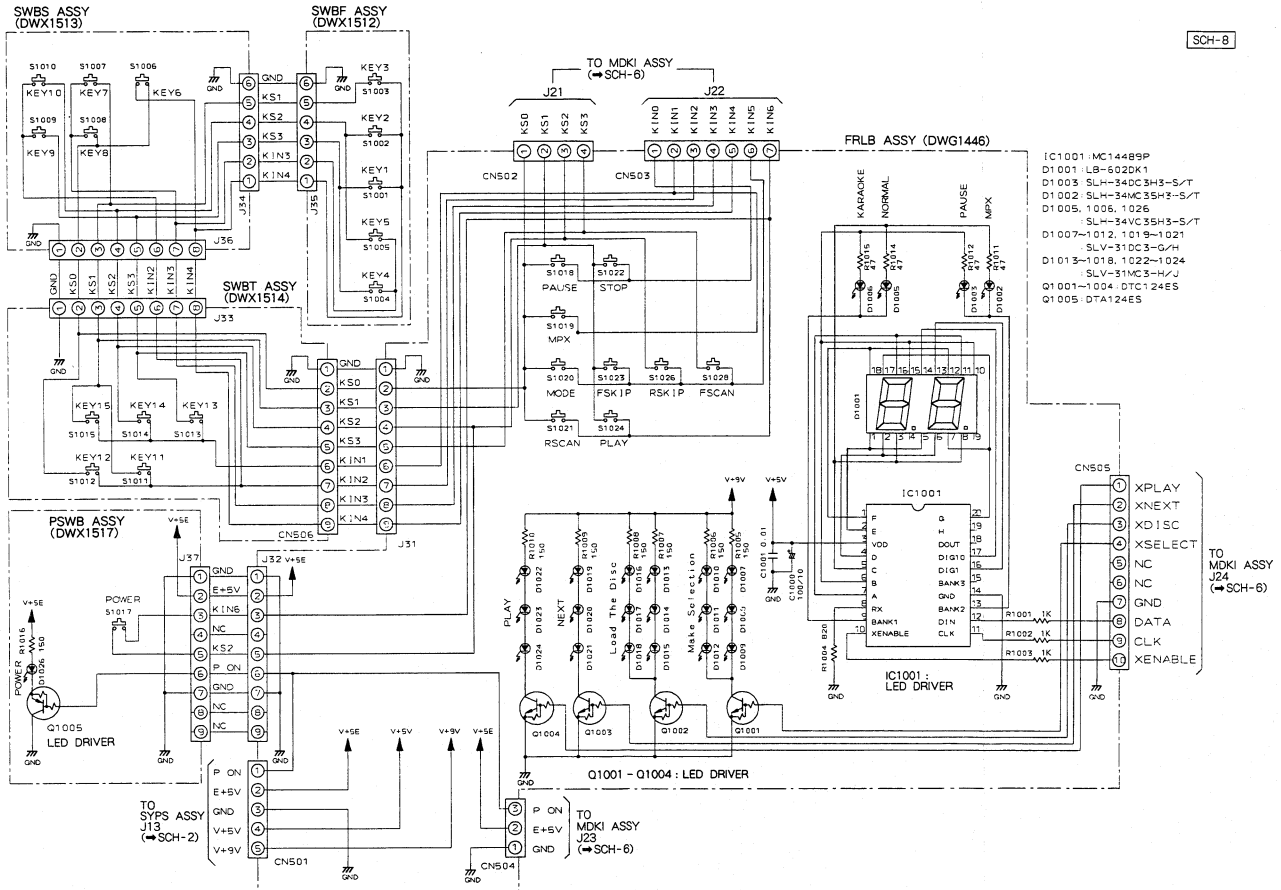
● This diagram is viewed from the foil side.

2.8 SWBS, SWBF, SWBT, PSWB AND FRLB ASSEMBLIES



PCB-6

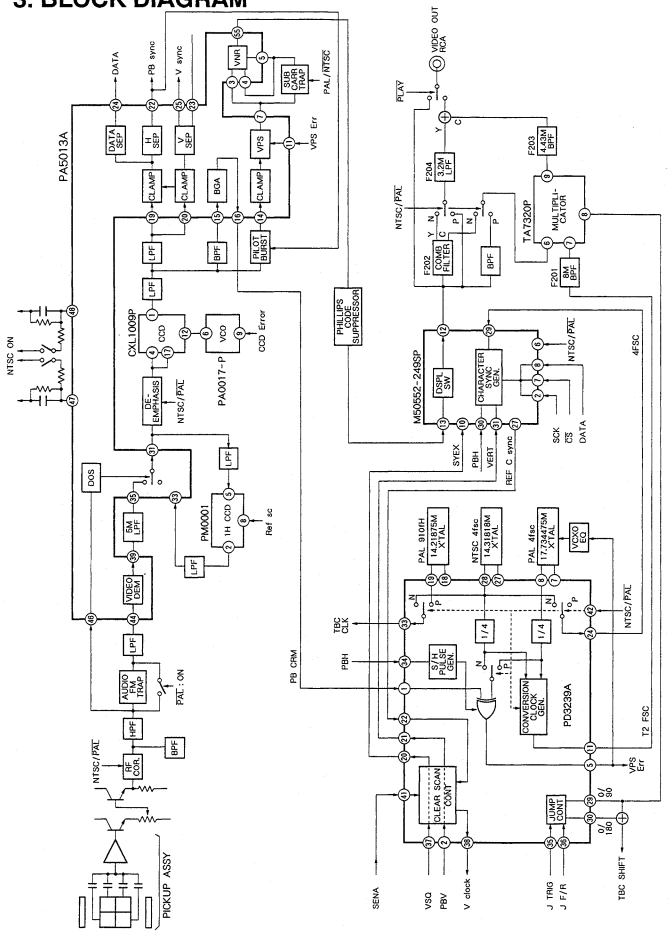
● This diagram is viewed from the mounted parts side.



SCH-8

SWBS ASSY,SWBF ASSY, SWBT ASSY,PSWB ASSY, FRLB ASSY

SCH-8

SWBS ASSY,SWBF ASSY, SWBT ASSY,PSWB ASSY, FRLB ASSY

3. BLOCK DIAGRAM